

## G10H

### ELECTROPHONIC MUSICAL INSTRUMENTS; INSTRUMENTS IN WHICH THE TONES ARE GENERATED BY ELECTROMECHANICAL MEANS OR ELECTRONIC GENERATORS, OR IN WHICH THE TONES ARE SYNTHESISED FROM A DATA STORE

#### Definition statement

*This place covers:*

- Artistic processing of music, i.e. musical processing involving alterations in harmony, timbre, texture, melody, rhythm or expressivity
- Assisted or automated music creation, synchronisation or interpretation, e.g. automatic composing, interactive music displays, karaoke, instrument karaoke, musical accompaniment, musical aspects of videogames
- Music analysis or synthesis
- electrophonic musical instruments, mechanical details, components or accessories for use in electrophonic musical instruments
- Input/output devices therefor, e.g. electric guitar transducers, synthesiser keyboards
- Control, communications or data organization therefor, e.g. effect pedals for guitars, internet jamming protocols, MIDI, wavetables, rhythm or harmony metadata.

#### Relationships with other classification places

[G10L](#) Speech analysis or synthesis; speech recognition; speech or voice processing; speech or audio coding or decoding should systematically be considered as a function place for voice processing or audio coding applications, [G10H](#) being an application place for voice processing or audio coding with a musical application, e.g. melodic or rhythmic analysis of a singing voice, electrophonic musical instrument control, special encoding of audio sounds for synthesiser wavetables.

The classification of voice processing as speech processing [G10L](#) or electrophonic musical instruments [G10H](#) is therefore highly dependent on the primary vocal intent of the signal to be processed, i.e. communication of meaning, a.k.a. speech ([G10L](#)) or musical, e.g. singing.

If the primary vocal intent is musical, e.g. singing, then the nature, musical or not, of the voice processing, i.e. the result to be achieved, determines whether a [G10H](#) classification is appropriate.

Examples:

- Recognition of sung words, i.e. meaning extraction: consider [G10L 15/00](#) speech recognition
- Musical melodic transcription (or transposition) of the sung words, e.g. to a musical score by extraction of note pitches or musical rhythm information: consider [G10H](#).

Musical voice processing must be systematically classified in [G10H](#), but [G10L](#) should be considered for the vocal processing aspects of musical voice processing.

Musical games, musical rhythm games such as dance games, musical aspects of videogames e.g. game background music changes, synchronisation between image and musical events, must systematically receive a classification of their musical aspects in [G10H](#). [A63F 13/00](#) should be considered for the gaming aspects of such games.

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Game rules or game display appearance	<a href="#">A63F</a>
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Audio or sound effects for videogames	<a href="#">A63F 13/00</a>
Pitch and rhythm extraction in videogames, substantially similar to <a href="#">G10H 2210/066</a> ("for pitch analysis"), <a href="#">G10H 2210/076</a> ("tempo analysis"), <a href="#">G10H 2210/091</a> ("performance evaluation") with <a href="#">G10H 2220/135</a> ("games"), also related to <a href="#">G10H 1/366</a> voice modification	<a href="#">A63F 2300/6072</a>
Music games	<a href="#">A63F 2300/8047</a>
Metronomes	<a href="#">G04F 5/02</a>
Electrical digital data processing	<a href="#">G06F</a>
Digital computing or data processing equipment or methods, specially adapted for information retrieval of audio data	<a href="#">G06F 16/60</a>
Security arrangements for protecting computers or computer systems against unauthorised activity	<a href="#">G06F 21/00</a>
Teaching music per se	<a href="#">G09B 15/00</a>
Acoustic, i.e. non-electronic, musical instruments	<a href="#">G10B- G10F</a>
Keyboard improvements also suitable for acoustic pianos, e.g. counterweights; mechanical details of electronic piano keyboards also mechanically driving hammers	<a href="#">G10C 3/12</a>
Stringed musical instruments; wind-actuated musical instruments; accordions or concertinas; percussion musical instruments; musical instruments not otherwise provided for e.g. mechanical details or accessories of electronic musical instruments, corresponding to a suitable acoustic instrument type, e.g. whammy bar for electric guitars, bodies of electric guitars,	<a href="#">G10D</a>
Aids for music; Supports for musical instruments; Other auxiliary devices or accessories for music or musical instruments	<a href="#">G10G</a>
Sound producing devices	<a href="#">G10K</a>
Speech analysis or synthesis; speech recognition; speech or voice processing; speech or audio coding or decoding	<a href="#">G10L</a>
Speech or audio signal analysis-synthesis techniques for redundancy reduction in general, e.g. in vocoders ; Coding or decoding of speech or audio signals in general, using source filter models or psychoacoustic analysis	<a href="#">G10L 19/00</a>
Information storage based on relative movement between record carrier and transducer	<a href="#">G11B</a>
Signal processing not specific to the method of recording or reproducing; Circuits therefore	<a href="#">G11B 20/00</a>
Music playlists, music indexing	<a href="#">G11B 27/00</a>
Basic electronic circuitry	<a href="#">H03</a>
Amplifiers	<a href="#">H03F</a>
Gain control in amplifiers or frequency changers	<a href="#">H03G 3/00</a>
Tone controls or bandwidth control in amplifiers	<a href="#">H03G 5/00</a>
Arrangements for broadcast applications with a direct linking to broadcast information or broadcast space-time; Broadcast-related systems, e.g. sound mixing	<a href="#">H04H 60/04</a>
Details of transducers, loudspeaker or microphones	<a href="#">H04R 1/00</a>
Stereophonic systems, e.g. 3D sound field processing	<a href="#">H04S</a>

## Special rules of classification

Classification of invention information and additional information is obligatory,

Classifying additional information is obligatory even if the main invention does not belong to this subclass.

Indexing Code symbols of the type

[G10H 2210/00](#) - [G10H 2210/626](#) - [G10H 2250/00](#) - [G10H 2250/645](#) represent information mostly orthogonal to ECLA groups and should be systematically used to classify information relevant to the main described concepts and ideas, although it need not be invention information. The number of Indexing Code symbols assigned to a document is not limited.

It is considered acceptable to allocate three or four ECLA classes to a particular document if needed.

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Musical instrument	"tool", "device", "process" or "protocol" for performing some musical task involving electrophonic signals, e.g. musical parameters
Music	A n art form whose medium is sound and silence. Its common elements are pitch (which governs melody and harmony), rhythm (and its associated concepts tempo, meter, and articulation), dynamics, and the sonic qualities of timbre and texture. Music (including singing, the vocalized form of music) is distinguished from speech by its particular and deliberate emphasis on the above common elements, especially rhythm and melody. By contrast, speech is distinguished from music by its particular and deliberate emphasis on conveying meaning: Speech is the vocalized form of human communication
Musical	Generally employed in a restrictive limiting sense with respect to speech, general audio and sound, i.e. implying an intentional and artistic main focus at least by the performer on at least one of harmony, melody, rhythm, timbre, or expressivity. Even though one person's music may be noise to another, music is a performing art, and musical character is defined by the mere artistic intent of the performer
Musical content	Set of musical parameters.
Musical parameters	Constituent element of "musical content" as defined above. Musical parameters include e.g. pitch, rhythm, timbre, texture, expressivity or dynamics.
MIDI	MIDI stands for Musical Instrument Digital Interface and refers to a note oriented music file and transmission format. Many variations and improvements of this note oriented format exist. The use of the acronym MIDI should be broadly interpreted as also referring to any note oriented format for transmission or recording.

Performance	has three meanings in this field : -in a first meaning, it is an event in which a performer or group of (typically human) performers behave in a particular way (e.g. in their manner of singing or performing music) for another group of people. -in a second meaning it refers to a metric quantifying how well an entity (human, device, or process) deals with a specific aspect of a specific (not necessarily musical, e.g. mflops for a DSP processor in a synthesiser) task- in a third, narrower meaning, it is meant as the strict intersection of the above two meanings, i.e. quantifying the closeness of a performer's performance to a predetermined musical or singing reference i
Karaoke	(translation from the Japanese: "empty orchestra"; synonyms: KTV, Noraebang) Karaoke refers to singing into a microphone by amateur performers along e.g. recorded music or a music video, often with a lyrics display or with performance evaluation
Instrument karaoke	Playing a predetermined melody on a musical instrument or a musical instrument interface, often with score following along with recorded or synthesised accompaniment, often with means for evaluating or scoring the quality of the performance
Rhythm	Regular recurrence or pattern in time, associated concepts: meter, tempo, articulation and beat:
Expressivity	Musical properties which cannot be properly described by notions of harmony, rhythm, pitch, timbre or texture, and which are linked to a particular manner of execution of a musical piece, e.g. indications of mood, e.g. "dolce", or to corresponding note execution parameters such as vibrato or legato, some of which can be coded in communications protocols such as MIDI e.g. expressivity controller.
Polyphony	Ability of a synthesiser to simultaneously generate a limited number of unrelated melodic lines, Polyphony is conventionally quantified as the number of available "voices": a sound-generating device with six voices may be described as being, for example, six-voice polyphonicEach melodic line or simultaneous note requires one resource entity (for example a block of electronic hardware or a time-slot in a Digital Signal Processor program) capable of generating a single tone, and this is what is known as one "voice"
Voice	Has several important meanings in this field :- Resource entity (hardware, time slot) needed to generate a single tone or a single melodic line, in the context of polyphony. The term is generic, and is not meant to imply that the line should necessarily be vocal in character, instead referring to instrumentation or simply to register.This field-specific meaning of "voice" is relevant for <a href="#">G10H 1/18</a> selecting circuits; it is further defined in the definition of "polyphony" and in that of "part" - Sounds generated by vocal chords (e.g. human vocal folds) or synthetic versions thereof, e.g.: - as the medium of speech to communicate meaning; - for artistic musical purposes, e.g. with greater emphasis on melody or rhythm, as in singing, chorus, descant; or - for instrument control purposes (e.g. <a href="#">G10H 5/005</a> voice controlled instruments)
Speech	Definite vocal sounds that form words to express thoughts and ideas

Part	In addition to the usual meaning, a piece of a whole, a part has three more precise meanings in a musical sense:- A part is a strand or melody of music played by an individual instrument or voice (or group of identical instruments or voices) within a larger work. In the context of polyphonic composition the term voice may be used instead of part to denote a single melodic line or textural layer. This field-specific meaning is very commonly used in connection with MIDI - A part also refers to the separate printed or manuscript copies of the music for each individual instrument in an ensemble or orchestra, as distinct from the score, which holds the music for all the instruments.- A part in great Highland Bagpipe music is a musical strain or sentence. Usually each part consists of four phrases, either one or two bars long. Several sentences combine to produce a paragraph or complete work or tune.
Audio signal	An audio signal is a representation of sound, usually electrical, in analog, digital or coded form, without restriction as to the category of sound being represented, e.g. speech, music, noise, The category of sound being represented, e.g. speech, music or noise, is primarily defined with respect to the features of the audio signal and with respect to the main intent of the source or performer. This category, as defined in this glossary, is very relevant for proper classification

## G10H 1/00

### Details of electrophonic musical instruments

#### Definition statement

*This place covers:*

Details of electrophonic musical instruments, electrophonic musical tools, electrophonic musical data or electrophonic musical processing.

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Instruments in which the tones are generated by electromechanical means	<a href="#">G10H 3/00</a>
Instruments in which the tones are generated by means of electronic generators	<a href="#">G10H 5/00</a>
Voice controlled electrophonic musical instruments	<a href="#">G10H 5/005</a>
Real-time simulation of <a href="#">G10B</a> , <a href="#">G10C</a> , <a href="#">G10D</a> -type instruments using recursive or non-linear techniques, e.g. waveguide networks, recursive algorithms	<a href="#">G10H 5/007</a>
Electrophonic musical instrument processor architecture	<a href="#">G10H 7/002</a>
Sample based waveform production processes from data store samples in electrophonic musical instruments	<a href="#">G10H 7/02</a>
Functions based waveform production processes with parameters stored in data store in electrophonic musical instruments	<a href="#">G10H 7/08</a>
Details or accessories of organs, harmoniums or similar wind instruments	<a href="#">G10B 3/00</a>

Details or accessories of pianos, harpsichords, spinets or similar stringed musical instruments with one or more keyboards	<a href="#">G10C 3/00</a>
Arrangements for producing a reverberation or echo sound	<a href="#">G10K 15/08</a>

## Special rules of classification

Documents dealing with details of musical instruments and which do not contain features corresponding to a subgroup of [G10H 1/00](#) shall be classified in [G10H 1/00](#) and appropriate Indexing Code [G10H 2210/00](#) - [G10H 2250/645](#).

## Synonyms and Keywords

*In patent documents, the following abbreviations are often used:*

ADSR	Attack Decay Sustain Release, an approach to note synthesis and note envelope control
IR	Impulse response or Infrared, depending on context
FIR	Finite impulse response
IIR	Infinite impulse response
Spint	Special Instrument, instrument with unusual features
PCM	pulse code modulation
WAV	Waveform audio file format
ADPCM	Adaptive Differential Pulse Code Modulation
CELP	Code excited linear prediction, used for audio coding
MP3, AC3, ATRAC	various audio compression formats
RFID	radio frequency identification
LFO	low frequency oscillator
VCF	Voltage controlled filter (see <a href="#">G10H 5/002</a> )
CRC	Cyclical redundancy check
LZT	lead zirconate (piezoelectric sensors)
PDA	personal digital assistant, tablet computer
GSM	time division multiplexed mobile telephony standard
3D	three dimensional
DFT	discrete fourier transform
DCT	discrete cosine transform
FFT	fast fourier transform
IFFT	inverse fast fourier transform
Mplay	multiplayer
Velocity	volume of a note

## G10H 1/0008

### {Associated control or indicating means}

#### Definition statement

*This place covers:*

Producing, processing or displaying musical information, status information or musical parameters, e.g. for information of the user or as control parameters, e.g. for controlling electrophonic musical instruments, indexing or retrieving musical data from musical databases.

Musical analysis of audio or music signals; extraction of musical parameters.

User interfaces for musicians, such as specialised displays.

Control of electrophonic musical instruments: This group is appropriate for classifying control details which are not otherwise provided for in all other groups in [G10H 1/00](#).

Music databases relying on musical parameters which are the result of musical analysis, relate to composing or synthesis, e.g. wavetables or sound banks, include note oriented data, or are otherwise specifically meant for use by a device classified in electrophonic musical instruments.

#### Relationships with other classification places

Audio data information retrieval, indexing or data structures relating to audio waveform synthesis should be classified in [G10H 7/02](#) - [G10H 7/12](#), e.g. audio sample libraries such as synthesiser wavetables, [G10H 7/02](#).

General purpose audio data information retrieval using content features or bibliographical data associated with the audio data, e.g. libraries of PCM or MP3 audio files not indexed with musical parameters, and not used for composition or synthesis: [G06F 16/60](#).

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Musical transmission parameters, protocols, transmission or storage formats or encoding for transmission or storage	<a href="#">G10H 1/0033</a>
Information retrieval of audio data	<a href="#">G06F 16/60</a>
Teaching of music per se	<a href="#">G09B 15/00</a>
Means for the representation of music	<a href="#">G10G 1/00</a>
Chord or note indicators, fixed or adjustable, for keyboard of fingerboards	<a href="#">G10G 1/02</a>

#### Special rules of classification

Audio data information retrieval, indexing or data structures should be classified in [G10H 1/0008](#) (if the invention is the index, index extraction or data structure) or [G10H 1/0041](#) (if the nature of the stored musical data or associated metadata is important, e.g. different piano note samples at different playing loudnesses for a piano synthesiser) whenever they rely on musical parameters such as pitch, dynamics, harmony, timbre, texture, melody, rhythm or expressivity.

Audio data information retrieval, indexing or data structures relating to composing, e.g. musical collage, medley, should be classified in [G10H 1/0025](#), along with musical rule bases, and databases of music fragments suitable for composing, organised according to a certain composing logic.

Libraries relating only to specific electrophonic musical instruments such as synthesisers, libraries generated or organized or managed by a music sampler, or libraries specifically organised or indexed to facilitate musical composing [G10H 2210/101](#) ("composing"), [G10H 2240/121](#) ("library").

## G10H 1/0033

**{Recording/reproducing or transmission of music for electrophonic musical instruments}**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Recording/reproducing of accompaniment for use with an external source, e.g. karaoke systems	<a href="#">G10H 1/361</a>
Recording or reproducing of audio signals using Pulse Code Modulation [PCM]	<a href="#">G11B 20/10527</a>

## G10H 1/0041

**{in coded form}**

### Definition statement

*This place covers:*

Musical content recording, reproducing or storage or corresponding data formats or data structures, in coded form e.g. PCM, MP3, ADPCM; also corresponding metadata contents in cases the metadata includes musical parameters (transmission of musical contents [G10H 1/0058](#), wireless transmission [G10H 1/0083](#)).

Musical data structures used for recording, e.g. in musical libraries such as wavetables or song fragments indexed with musical parameters such as tempo, chord, genre, for remix composing applications.

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Instruments in which the tones are digitally synthesised from a data store using a common processing for different operations or calculations and a programme to control the sequence thereof	<a href="#">G10H 7/002</a>
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### Special rules of classification

The indication of additional groups in [G10H 2240/121](#) for further definition of the musical library or [G10H 2240/075](#) metadata should be given if appropriate. Also an indication of intended processes in [G10H 2210/00](#) or [G10H 2250/00](#), if applicable, should be given.



**G10H 1/0058**

**{Transmission between separate instruments or between individual components of a musical system ([G10H 1/0083](#) takes precedence)}**

**Definition statement**

*This place covers:*

Modes of transmission or transmission protocols, e.g. MIDI to or from an electrophonic musical instrument.

Any transmission, also when it is not music per se, even if it only represents control data or transmission of network information for electrophonic musical instruments: e.g. latency data transmission for music jamming over the internet (see also [G10H 2240/175](#) ("transmission jams")), [G10H 2240/281](#) transmission protocols specially used for musical instruments.

**References****Limiting references**

*This place does not cover:*

Transmission between separate instruments or between individual components of a musical system using wireless transmission, e.g. radio, light, infrared	<a href="#">G10H 1/0083</a>
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**G10H 1/0083**

**{using wireless transmission, e.g. radio, light, infrared}**

**Special rules of classification**

Whenever a wireless aspect is important for an electrophonic musical instrument, then it should be coded here (ignore the hierarchy), regardless of whether music or other control data is transmitted.

**G10H 1/0091**

**{Means for obtaining special acoustic effects (combined with modulation [G10H 1/043](#))}**

**Definition statement**

*This place covers:*

Musical effects not otherwise provided for, e.g. DJ scratch effects.

**References****Limiting references**

*This place does not cover:*

Means for controlling the tone frequencies, e.g. attack, decay; Means for producing special musical effects, e.g. vibrato, glissando	<a href="#">G10H 1/02</a>
Means for controlling the tone frequencies by additional continuous modulation	<a href="#">G10H 1/043</a>
Circuits for establishing the harmonic content of tones, by combining tones, for obtaining chorus, celeste or ensemble effects	<a href="#">G10H 1/10</a>

Means for processing the signal picked up from the strings, for distorting the signal, e.g. to simulate tube amplifiers	<a href="#">G10H 3/187</a>
Aspects of games using an electronically generated display having two or more dimensions, e.g. 3D sound effects in virtual videogame spaces	<a href="#">A63F 13/00</a>
Arrangements for producing a reverberation or echo sound	<a href="#">G10K 15/08</a>

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Accompaniment arrangements: Chord	<a href="#">G10H 1/38</a>
Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel: reproducing continuously a part of the information, i.e. repeating	<a href="#">G11B 27/005</a>
Stereophonic Systems, e.g. Electronic adaptation of multi-channel audio signals to reverberation of the listening space	<a href="#">H04S 7/305</a>

### Special rules of classification

Classification [G10H 1/0091](#) should also be assigned whenever details of turntable-like DJ interfaces covered by [G11B 27/005](#) go beyond mere mechanical details of the turntable and include details about the generation of audio control signals, e.g. MIDI, or real-time audio signal processing details specifically for providing the DJ scratch effect.

Indexing Codes of the Indexing Code main group [G10H 2210/155](#) ("effect") shall be assigned to define effect types.

## G10H 1/02

**Means for controlling the tone frequencies, e.g. attack or decay; Means for producing special musical effects, e.g. vibratos or glissandos**

### Definition statement

*This place covers:*

The time dependent control of:

- Amplitude modulation of musical signal in general, e.g. envelope, dynamics, ADSR,
- Pitch modulation of a musical signal in general, e.g. glissando, vibrato.

The control of tone colour modulation of musical signal (e.g. spectral contents, timbre variation, filtering).

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Instruments using voltage controlled oscillators and amplifiers or voltage controlled oscillators and filters	<a href="#">G10H 5/002</a>
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## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

ADSR	denotes a form of envelope used for synthesizing a tone which is split into four time segments: Attack, Decay, Sustain, Release. An ADSR envelope is defined by an attack time, decay time, sustain level and release time
Attack time	is the time taken for initial run-up of level from nil to peak, beginning when the key is first pressed
Decay time	is the time taken for the subsequent run down from the attack level to the designated sustain level
Sustain level	is the level during the main sequence of the sound's duration, until the key is released
Release time	is the time taken for the level to decay from the sustain level to zero after the key is released

## G10H 1/047

**by acousto-mechanical means, e.g. rotating speakers or sound deflectors**

### Definition statement

*This place covers:*

Continuous modulation by acousto-mechanical means.

Electronic or computer simulations of the effect of such acousto-mechanical means, e.g. Leslie effect.

## G10H 1/055

**by switches with variable impedance elements**

### Definition statement

*This place covers:*

Electric or mechanical switches or analogue control elements with variable impedance for controlling electrophonic musical instruments or computer music interfaces.

Analogue variable impedance elements, e.g. strain gauge, potentiometer, variable inductor, as used in electrophonic musical instruments, regardless of its control effects.

Indexing Codes [G10H 2220/275](#) (input key switch) and [G10H 2220/561](#) (transducer resistor) represent additional aspects which should be considered for finer classification.

## G10H 1/06

**Circuits for establishing the harmonic content of tones {, or other arrangements for changing the tone colour}**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Time-dependent modulation of amplitude or pitch parameters	<a href="#">G10H 1/04</a>
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**G10H 1/08**

by combining tones ([G10H 1/14](#), [G10H 1/16](#) take precedence; chord [G10H 1/38](#))

**References****Limiting references**

*This place does not cover:*

Circuits for establishing the harmonic content of tones during execution	<a href="#">G10H 1/14</a>
Circuits for establishing the harmonic content of tones by non-linear elements	<a href="#">G10H 1/16</a>
Chord	<a href="#">G10H 1/38</a>

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Speech analysis or synthesis	<a href="#">G10L</a>
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**G10H 1/125**

{using a digital filter}

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Digital filters per se	<a href="#">H03H 17/02</a>
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**G10H 1/14**

during execution {(voice controlled instruments [G10H 5/005](#))}

**References****Limiting references**

*This place does not cover:*

Voice controlled instruments	<a href="#">G10H 5/005</a>
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**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Modulation during execution	<a href="#">G10H 1/053</a>
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**G10H 1/16****by non-linear elements ([G10H 1/14](#) takes precedence)****References****Limiting references***This place does not cover:*

Circuits for establishing the harmonic content of tones during execution	<a href="#">G10H 1/14</a>
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**Informative references***Attention is drawn to the following places, which may be of interest for search:*

Generation of non-sinusoidal basic tones	<a href="#">G10H 5/10</a>
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**Special rules of classification**

If the nonlinear element e.g. semiconductor such as JFET or diode, is used for voluntary distortion of existing audio waveforms for musical purposes, then [G10H 3/187](#) should be assigned as well, irrespective of whether it is used with a string instrument or not.

**G10H 1/22****for suppressing tones; Preference networks****Definition statement***This place covers:*

Selecting which notes or voices to suppress from polyphonic music, e.g. to alleviate the effects of insufficient hardware capabilities or to save processing power.

Also covers deliberately simplifying polyphony or melody, suppressing notes for correcting errors in music signal transmission (e.g. frozen notes due to a missing note-off command).

**Special rules of classification**

When applicable, also classify in Indexing Code group [G10H 2230/041](#) if processor load is important, for mobile telephones see Indexing Code group [G10H 2230/021](#) for mobile ringtones.

**G10H 1/24****for selecting plural preset register stops****Definition statement***This place covers:*

Details specifically dealing with relevant aspects of selection of different tone colours or instrument voices, e.g. piano, violin, trumpet.

## G10H 1/26

### for automatically producing a series of tones

#### Definition statement

*This place covers:*

Automatically producing a predetermined and unchangeable sequence of musical tones upon initial triggering, specifically dealing with musical parameters.

Circuits for musical cards or the like, algorithmically producing a pre-programmed, unchangeable melody, e.g. from a coded sequence of tones in a ROM.

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Musical or noise- producing devices for additional toy effects other than acoustical	<a href="#">A63H 5/00</a>
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## G10H 1/32

### Constructional details

#### Definition statement

*This place covers:*

Mechanical details of electrophonic musical instruments, where such mechanical details are not otherwise provided for.

This includes for example:

- Details of the body, frame, casing, electronic keyboard cover lid,
- Ergonomic details such as shape of its body, position of its connectors,
- Portability aspects, shoulder straps,
- Power supply arrangements,
- Unusual details of the appearance of the electrophonic instrument.

#### Special rules of classification

Indexing Codes under [G10H 2230/00](#) provide additional subdivisions for indexing features of constructional details.

Indexing Code symbol under [G10H 2230/045](#) relating to "spint" (special instrument) shall be used for classifying electrophonic instruments according to their similarity to, or improvement to, a specific conventional acoustic instrument type, shape, usage, characteristic feature, sound signature or overall character in combination with [G10H 1/32](#) if mechanical constructional details are involved and if a suitable special instrument category is listed as Indexing Code.

## G10H 1/34

### Switch arrangements, e.g. keyboards or mechanical switches specially adapted for electrophonic musical instruments

#### Definition statement

*This place covers:*

Constructional details at keyboard level or key level, mechanisms linked to individual keys or keyboards.

Key-like user input controls for electrophonic musical instruments, e.g. pedals, touchscreen active zones, not only including mechanical switches with contacts, but also switches in a generalised sense, e.g. light barriers, even with continuously varying output.

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Controlling tone frequencies by continuous modulation by switches with variable impedance elements	<a href="#">G10H 1/055</a>
Keyboards applicable to acoustic instruments	<a href="#">G10B</a> , <a href="#">G10C</a>

#### Special rules of classification

[G10H 1/34](#) should be used when the arrangement of multiple keys with respect to one another is ergonomically or musically important (whole keyboard features).

[G10H 1/344](#), [G10H 1/346](#) or [G10H 1/348](#) should be restricted to constructional details at key level, e.g. mechanisms linked to individual keys, whole keyboard arrangements should be classified in [G10H 1/34](#) or [G10H 1/342](#).

Indexing Codes provide additional subdivision: see [G10H 2220/265](#) ("input key"), [G10H 2220/221](#) ("input keyboard"); for continuous keyboards see [G10H 2210/401](#) ("scale microtonal").

Processing information on key actuation: see key multiplexing [G10H 1/182](#).

## G10H 1/348

### {Switches actuated by parts of the body other than fingers}

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Pedals or pedal mechanisms for wind-actuated organs	<a href="#">G10B 3/14</a>
Pedals or pedal mechanisms for pianos	<a href="#">G10C 3/26</a>

## G10H 1/36

### Accompaniment arrangements

#### Definition statement

*This place covers:*

Accompaniment systems, e.g. karaoke.

[G10H 1/361](#) also includes instrument karaoke, in which the performer does not sing to recorded music but is expected to play a specific melody on an instrument in synchrony with recorded music.

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Teaching of music per se	<a href="#">G09B 15/00</a> .
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#### Special rules of classification

Whenever accompaniment systems unrelated to karaoke are allocated in [G10H 1/361](#) or subgroups thereof, Indexing Code [G10H 2210/005](#) ("accompaniment") should be assigned if applicable.

karaoke systems per se should be classified in [G10H 1/361](#) and subgroups, but not in [G10H 1/36](#).

The JPO classifies karaoke in FI and IPC [G10K 15/04](#), with a detailed cross-indexing in FT 5D108. Search in those fields is necessary for any complete search involving karaoke.

## G10H 1/363

**{using optical disks, e.g. CD, CD-ROM, to store accompaniment information in digital form}**

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Recording or reproducing by optical means	<a href="#">G11B 7/00</a>
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## G10H 1/368

**{displaying animated or moving pictures synchronized with the music or audio part}**

#### Definition statement

*This place covers:*

Features specific to synchronisation of musical parameters to moving images, musical accompaniment of slide shows, background music dependence on videogame environment or videogame character actions.

Features specific to karaoke synchronized with animated pictures (karaoke lyrics [G10H 1/0008](#), [G10H 2220/011](#) display lyrics).



## Definition statement

Musical games where user actions on musical parameters are expected to be synchronized to music and video, e.g. rhythmic hopscotch type games such as Dance Revolution.

Generation of artistic images related to music parameters (informative musical displays [G10H 1/0008](#)).

**G10H 1/40****Rhythm****Definition statement**

*This place covers:*

Analysis of rhythmic information such as tempo, timing, e.g. of onsets, beat.

Processing of rhythmic information for processing music, such as selecting music from a database, music composition.

Generation of rhythmic information for use in electrophonic musical instruments: e.g. timing control, timing processing, timing classification, timing synchronisation, timing encoding of musical data, synthesis of rhythmic information.

Display of rhythmic information in music such as tempo, timing, beat, onsets.

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Synchronisation of music with video	<a href="#">G10H 1/368</a>
Training appliances or apparatus for special sports: for running, jogging or speed-walking	<a href="#">A63B 69/0028</a>
Metronomes	<a href="#">G04F 5/02</a>
Modification of at least one characteristic of speech waves: time compression or expansion	<a href="#">G10L 21/04</a>

**Special rules of classification**

Beat or rhythm synchronisation of two successive pieces, e.g. in remix, also consider [G10H 7/008](#) in addition to [G10H 1/40](#).

For rhythms selected according to exercising or body rhythms, also consider [A63B 69/00](#) in addition to [G10H 1/40](#).

For databases with tempo or rhythm indexing, please consider a dual classification in [G06F 16/60](#) and [G10H 1/0041](#) in addition to [G10H 1/40](#).

**G10H 1/46****Volume control****Definition statement**

*This place covers:*

Volume control specifically provided in electrophonic musical instruments: e.g. MIDI volume control, MIDI velocity controller, volume control for electric guitars, for musical keyboards.

## G10H 3/00

### Instruments in which the tones are generated by electromechanical means

#### Definition statement

*This place covers:*

Instruments in which a mechanically moving part is caused to move at the frequency of the generated note, and in which this movement is sensed by a movement sensor other than a microphone.

Details of movement transducers therefor, e.g. magnetic guitar pick-up;

Instrument-specific adaptations for contact microphones.

Audio signal processing specially adapted for further musical processing of signals from said transducers or for musical parameter extraction.

Percussion synthesis or drumpad triggers, even if the mechanically moving part is non-resonant, i.e. does not have a frequency of oscillation, see in particular [G10H 3/146](#).

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Loudspeaker enclosure specifically adapted to a musical instrument and interacting with musically, structurally or ergonomically relevant parts of the musical instrument	<a href="#">G10H 1/32</a>
Acoustic musical instruments equipped with microphones or microphone, e.g. microphone positioning on specific acoustic instruments; musical instruments	<a href="#">G10C</a> - <a href="#">G10F</a>
Microphones or loudspeakers	<a href="#">H04R</a>
Loudspeaker enclosures	<a href="#">H04R 1/02</a> , <a href="#">H04R 1/28</a>
Special adaptations for use as contact microphones, e.g. on musical instrument, on stethoscope	<a href="#">H04R 1/46</a>

## G10H 3/125

### {Extracting or recognising the pitch or fundamental frequency of the picked up signal}

#### Definition statement

*This place covers:*

Any pitch analysis for musical parameter extraction of an audio signal not specifically using a mechanical resonant generator.

This includes: note extraction, score transcription, performance evaluation e.g. of karaoke singing, pitch processing for query by humming.

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Pitch determination of speech signals in general	<a href="#">G10L 25/90</a>
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Special rules of classification within this group

Relevant Indexing Codes under [G10H 2210/031](#) ("analysis") must be assigned.

Additional classification under [G10H 1/40](#), e.g. associated beat or note onset timing analysis or [G10H 1/0008](#), e.g. other types of musical analysis is frequent.

Database retrieval based on pitch queries, classified both in [G10H](#) (e.g. [G10H 3/12](#), [G10H 1/0008](#), [G10H 1/0041](#) if the emphasis is on the pitch analysis algorithm, the type of indexing, or the data structure or metadata organisation of the musical parameters derived from pitch analysis) and [G06F 16/60](#).

## G10H 3/143

{characterised by the use of a piezoelectric or magneto-strictive transducer}

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Piezoelectric or magnetostrictive loudspeakers for mechanical vibrations	<a href="#">B06B</a> , <a href="#">G10K</a>
Piezoelectric or magnetostrictive transducers or microphones	<a href="#">H04R 15/00</a> , <a href="#">H04R 17/00</a>

## G10H 3/146

{using a membrane, e.g. a drum; Pick-up means for vibrating surfaces, e.g. housing of an instrument}

## Definition statement

This place covers:

Electronic drums (see also Indexing Code [G10H 2230/275](#) ("spint drums"));

Vibration sensors sensing the vibrations of instrument bodies, also of guitars or other stringed instruments.

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Guitars used as percussion instruments	<a href="#">G10H 2230/141</a>
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## Special rules of classification

This group is also appropriate for classifying anything related to percussion synthesis, even if not using a membrane or a vibrating surface, e.g. optically triggered drum sounds drum triggers, non-resonant drumpads, sensors therefor.

It is essential in this group to assign enough classification symbols to be able to quickly retrieve the specific type of percussion, e.g. a hihat pedal typically would be coded here, in [G10H 1/348](#), and in the Indexing Code [G10H 2250/435](#) ("Gensound percussion") and especially in the relevant subdivisions of Indexing Code [G10H 2230/251](#) ("Spint percussion"), e.g. [G10H 2230/331](#) ("Spint cymbal hihat").

## G10H 5/00

**Instruments in which the tones are generated by means of electronic generators ([G10H 7/00](#) takes precedence)**

### Definition statement

*This place covers:*

Generation of musical tones by analogue electronic circuits.

Voice controlled instruments, even if the voice processing is performed by computer, and even if the output tone is synthesised from a data store.

Physical modelling of acoustic instruments, e.g. implemented by appropriate software.

Simulation of analogue circuits using digital means.

### References

#### Limiting references

*This place does not cover:*

Instruments in which the tones are synthesised from a data store, e.g. computer organs	<a href="#">G10H 7/00</a>
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## G10H 5/005

**{Voice controlled instruments}**

### Definition statement

*This place covers:*

Electrophonic musical instruments in which the output sound is controlled by processing the human voice or glottal signals of the performer in order to control parameters of the output audio signals, e.g. a trumpet sound, controlled by voice.

This is the correct classification for voice-controlled instruments even if the musical voice processing is performed by computer, and even if the output tone is synthesised from a data store under the control of the processed voice signals.

### References

#### Limiting references

*This place does not cover:*

Recording/reproducing of accompaniment for use with an external source, e.g. karaoke systems: with means for modifying or correcting the external signal, e.g. pitch correction, reverberation, changing a singer's voice	<a href="#">G10H 1/366</a>
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**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Musical analysis of a singing voice signal, including other aspects than pitch	<a href="#">G10H 1/0008</a> , <a href="#">G10H 2210/031</a> analysis
Mere pitch determination of a musical or singing signal	<a href="#">G10H 3/125</a>
Pitch determination of speech signal in general	<a href="#">G10L 25/90</a>

**G10H 5/007**

{Real-time simulation of [G10B](#), [G10C](#), [G10D](#)-type instruments using recursive or non-linear techniques, e.g. waveguide networks, recursive algorithms}

**Definition statement**

*This place covers:*

Physical modelling of acoustic instruments implemented by digital or analogue means (e.g. using computer based simulation).

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Establishing the harmonic content of tones by non-linear elements	<a href="#">G10H 1/16</a>
Synthesising waveforms using a recursive algorithm	<a href="#">G10H 7/12</a>

**G10H 7/00**

Instruments in which the tones are synthesised from a data store, e.g. computer organs

**Definition statement**

*This place covers:*

Computer architecture, computing hardware or waveform computation schemes specific to digital music synthesis.

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Synthesis of acoustic waves not specific to musical instruments	<a href="#">G10K 15/02</a>
Speech synthesis	<a href="#">G10L 13/00</a>
Speech or audio signal analysis-synthesis for redundancy reduction	<a href="#">G10L 19/00</a>

**Special rules of classification**

The [G10H 7/00](#) main group is to be used to classify specific details of:

- Music synthesiser architecture;

- Musical signal processor architecture for musical analysis or musical processing (see narrow definition of "musical") in the glossary;
- Processor load management or waveform processing not otherwise provided by sub-groups of [G10H 1/18](#) or [G10H 1/02](#) respectively;
- For all sub-groups of [G10H 7/00](#), Indexing Codes under [G10H 2230/00](#) ("hardware, shape or architecture aspects") and [G10H 2240/00](#) ("data or communications aspects") provide an orthogonal scheme for indexing features of sub-groups of [G10H 7/00](#);
- As the [G10H 7/00](#) groups are very imprecise regarding actual function, if there are relevant classes in [G10H 1/00](#), [G10H 3/00](#) or [G10H 5/007](#) or [G10H 5/005](#), or corresponding Indexing Codes, they should be systematically assigned in addition to the [G10H 7/00](#) symbols.

## G10H 7/008

**{Means for controlling the transition from one tone waveform to another}**

### Definition statement

*This place covers:*

Transition processing or controlling from one tone or music waveform to another, or from one music segment or music piece to another; means therefor.

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Glissando or legato per se	<a href="#">G10H 1/02</a>
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### Special rules of classification

Documents classified here should be given Indexing Codes under [G10H 2210/101](#) ("composing"; e.g. [G10H 2210/125](#) ("composing medley")), [G10H 2250/00](#) (e.g. [G10H 2250/035](#) ("crossfade")) or [G10H 2250/541](#) ("waveform").

## G10H 7/02

**in which amplitudes at successive sample points of a tone waveform are stored in one or more memories**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Recording or reproducing of audio signals using Pulse Code Modulation [PCM]	<a href="#">G11B 20/10527</a>
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### Special rules of classification

Documents classified here should be given Indexing Codes under [G10H 2250/541](#) ("waveform").

**G10H 2210/00**

**Aspects or methods of musical processing having intrinsic musical character, i.e. involving musical theory or musical parameters or relying on musical knowledge, as applied in electrophonic musical tools or instruments**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Aspects of algorithms or signal processing methods without intrinsic musical character, yet specifically adapted for or used in electrophonic musical processing	<a href="#">G10H 2250/00</a>
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**G10H 2210/005**

**Musical accompaniment, i.e. complete instrumental rhythm synthesis added to a performed melody, e.g. as output by drum machines**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Background music, e.g. for video sequences or elevator music	<a href="#">G10H 2210/021</a>
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**G10H 2210/021**

**Background music, e.g. for video sequences or elevator music**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical accompaniment, i.e. complete instrumental rhythm synthesis added to a performed melody, e.g. as output by drum machines	<a href="#">G10H 2210/005</a>
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**G10H 2210/031**

**Musical analysis, i.e. isolation, extraction or identification of musical elements or musical parameters from a raw acoustic signal or from an encoded audio signal**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Neural networks for electrophonic musical instruments or musical processing, e.g. for musical recognition or control, automatic composition or improvisation	<a href="#">G10H 2250/311</a>
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**G10H 2210/071****for rhythm pattern analysis or rhythm style recognition****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Rhythm pattern selection, synthesis or composition	<a href="#">G10H 2210/341</a>
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**G10H 2210/076****for extraction of timing, tempo; Beat detection****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Tempo or beat alterations; Music timing control	<a href="#">G10H 2210/375</a>
Beat indicator, e.g. marks or flashing LEDs to indicate tempo or beat positions	<a href="#">G10H 2220/081</a>

**G10H 2210/115****using a random process to generate a musical note, phrase, sequence or structure****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Random process used to build a rhythm pattern	<a href="#">G10H 2210/356</a>
Random process affecting a selection among a set of pre-established patterns	<a href="#">G10H 2210/366</a>

**G10H 2210/161****Note sequence effects, i.e. sensing, altering, controlling, processing or synthesising a note trigger selection or sequence, e.g. by altering trigger timing, triggered note values, adding improvisation or ornaments or also rapid repetition of the same note onset****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Vibrato, i.e. rapid, repetitive and smooth variation of amplitude, pitch or timbre within a note or chord	<a href="#">G10H 2210/201</a>
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## G10H 2210/191

**Tremolo, tremulando, trill or mordent effects, i.e. repeatedly alternating stepwise in pitch between two note pitches or chords, without any portamento between the two notes**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Note sequence effects, i.e. sensing, altering, controlling, processing or synthesising a note trigger selection or sequence, e.g. by altering trigger timing, triggered note values, adding improvisation or ornaments or also rapid repetition of the same note onset	<a href="#">G10H 2210/161</a>
Amplitude vibrato, i.e. repetitive smooth loudness variation without pitch change or rapid repetition of the same note, bisbigliando, amplitude tremolo or tremulants	<a href="#">G10H 2210/205</a>

## G10H 2210/195

**Modulation effects, i.e. smooth non-discontinuous variations over a time interval, e.g. within a note, melody or musical transition, of any sound parameter, e.g. amplitude, pitch, spectral response or playback speed**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Note sequence effects, i.e. sensing, altering, controlling, processing or synthesising a note trigger selection or sequence, e.g. by altering trigger timing, triggered note values, adding improvisation or ornaments or also rapid repetition of the same note onset	<a href="#">G10H 2210/161</a>
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## G10H 2210/201

**Vibrato, i.e. rapid, repetitive and smooth variation of amplitude, pitch or timbre within a note or chord**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Note sequence effects, i.e. sensing, altering, controlling, processing or synthesising a note trigger selection or sequence, e.g. by altering trigger timing, triggered note values, adding improvisation or ornaments or also rapid repetition of the same note onset	<a href="#">G10H 2210/161</a>
Tremolo, tremulando, trill or mordent effects, i.e. repeatedly alternating stepwise in pitch between two note pitches or chords, without any portamento between the two notes	<a href="#">G10H 2210/191</a>

## G10H 2210/205

**Amplitude vibrato, i.e. repetitive smooth loudness variation without pitch change or rapid repetition of the same note, bisbigliando, amplitude tremolo or tremulants**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Note sequence effects, i.e. sensing, altering, controlling, processing or synthesising a note trigger selection or sequence, e.g. by altering trigger timing, triggered note values, adding improvisation or ornaments or also rapid repetition of the same note onset	<a href="#">G10H 2210/161</a>
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## G10H 2210/211

**Pitch vibrato, i.e. repetitive and smooth variation in pitch, e.g. as obtainable with a whammy bar or tremolo arm on a guitar**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Tremolo, tremulando, trill or mordent effects, i.e. repeatedly alternating stepwise in pitch between two note pitches or chords, without any portamento between the two notes	<a href="#">G10H 2210/191</a>
Keyboards, i.e. configuration of several keys or key-like input devices relative to one another	<a href="#">G10H 2220/221</a>

## G10H 2210/221

**Glissando, i.e. pitch smoothly sliding from one note to another, e.g. gliss, glide, slide, bend, smear or sweep**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Arpeggio, i.e. notes played or sung in rapid sequence, one after the other, rather than ringing out simultaneously, e.g. as a chord; Generators therefor, i.e. arpeggiators; Discrete glissando effects on instruments not permitting continuous glissando, e.g. xylophone or piano, with stepwise pitch variation and on which distinct onsets due to successive note triggerings can be heard	<a href="#">G10H 2210/185</a>
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## G10H 2210/225

**Portamento, i.e. smooth continuously variable pitch-bend, without emphasis of each chromatic pitch during the pitch change, which only stops at the end of the pitch shift, as obtained, e.g. by a MIDI pitch wheel or trombone**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Glissando, i.e. pitch smoothly sliding from one note to another, e.g. gliss, glide, slide, bend smear or sweep	<a href="#">G10H 2210/221</a>
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## G10H 2210/265

**Acoustic effect simulation, i.e. volume, spatial, resonance or reverberation effects added to a musical sound, usually by appropriate filtering or delays**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Formant synthesis, i.e. simulating the human speech production mechanism by exciting formant resonators, e.g. mimicking vocal tract filtering as in LPC synthesis vocoders, wherein musical instruments may be used as excitation signal to the time-varying filter estimated from a singer's speech	<a href="#">G10H 2210/481</a>
Room models, i.e. acoustic physical modelling of a room, e.g. concert hall	<a href="#">G10H 2250/531</a>

## G10H 2210/295

**Spatial effects, musical uses of multiple audio channels, e.g. stereo**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Helmholtz resonance effect, i.e. using, exciting or emulating air resonance in a cavity	<a href="#">G10H 2210/275</a>
Acoustic effect simulation, reverberation or echo	<a href="#">G10H 2210/281</a>

**G10H 2210/311**

**Distortion, i.e. desired non-linear audio processing to change the tone colour, e.g. by adding harmonics or deliberately distorting the amplitude of an audio waveform**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Parabolic or second order polynomials, occurring, e.g. in vacuum tube distortion modelling or for modelling the gate voltage to drain current relationship of a JFET	<a href="#">G10H 2250/201</a>
Third order polynomials, occurring, e.g. in vacuum tube distortion modelling	<a href="#">G10H 2250/205</a>

**G10H 2210/315**

**Dynamic effects for musical purposes, i.e. musical sound effects controlled by the amplitude of the time domain audio envelope, e.g. loudness-dependent tone colour or musically desired dynamic range compression or expansion**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Envelope processing of music signals in, e.g. time domain, transform domain or cepstrum domain	<a href="#">G10H 2250/025</a>
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**G10H 2210/325**

**Musical pitch modification**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Pitch analysis as part of wider processing for musical purposes, e.g. transcription, musical performance evaluation; Pitch recognition, e.g. in polyphonic sounds; Estimation or use of missing fundamental	<a href="#">G10H 2210/066</a>
Musical effects	<a href="#">G10H 2210/155</a>

**G10H 2210/335**

**Chord correction, i.e. modifying one or several notes within a chord, e.g. to correct wrong fingering or to improve harmony**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Natural chords, i.e. adjustment of individual note pitches in order to generate just intonation chords	<a href="#">G10H 2210/586</a>
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**G10H 2210/341**

**Rhythm pattern selection, synthesis or composition**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical accompaniment, i.e. complete instrumental rhythm synthesis added to a performed melody, e.g. as output by drum machines	<a href="#">G10H 2210/005</a>
Musical rhythm pattern analysis or rhythm style recognition	<a href="#">G10H 2210/071</a>

**G10H 2210/346**

**Pattern variations, break or fill-in**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical accompaniment, i.e. complete instrumental rhythm synthesis added to a performed melody, e.g. as output by drum machines	<a href="#">G10H 2210/005</a>
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**G10H 2210/375**

**Tempo or beat alterations; Music timing control**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for extraction of timing, tempo; Beat detection	<a href="#">G10H 2210/076</a>
Humanizing effects, i.e. causing a performance to sound less machine-like, e.g. by slightly randomising pitch or tempo	<a href="#">G10H 2210/165</a>
Scratch effects, i.e. emulating playback velocity or pitch manipulation effects normally obtained by a disc-jockey manually rotating a LP record forward and backward	<a href="#">G10H 2210/241</a>

Beat indicator, e.g. marks or flashing LEDs to indicate tempo or beat positions	<a href="#">G10H 2220/081</a>
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## G10H 2210/381

### Manual tempo setting or adjustment

#### References

##### Informative references

Attention is drawn to the following places, which may be of interest for search:

Conductor baton movement detection used to adjust rhythm, tempo or expressivity of, e.g. the playback of musical pieces	<a href="#">G10H 2220/206</a>
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## G10H 2210/385

### Speed change, i.e. variations from preestablished tempo, tempo change, e.g. faster or slower, accelerando or ritardando, without change in pitch

#### References

##### Informative references

Attention is drawn to the following places, which may be of interest for search:

Scratch effects, i.e. emulating playback velocity or pitch manipulation effects normally obtained by a disc-jockey manually rotating a LP record forward and backward	<a href="#">G10H 2210/241</a>
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## G10H 2210/395

### Special musical scales, i.e. other than the 12-interval equally tempered scale; Special input devices therefor

#### References

##### Informative references

Attention is drawn to the following places, which may be of interest for search:

Keyboards, i.e. configuration of several keys or key-like input devices relative to one another	<a href="#">G10H 2220/221</a>
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## G10H 2210/431

### Quarter tone scale, i.e. 24 equal intervals per octave, e.g. for Arabic music

#### References

##### Informative references

Attention is drawn to the following places, which may be of interest for search:

Arabic scales, i.e. either double harmonic scale or major locrian scale; Vosta or zaid modes	<a href="#">G10H 2210/511</a>
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## G10H 2210/441

Janko scale, i.e. 41 equal intervals per octave, e.g. as used in the "tonal plexus" keyboard with 211 keys per octave arranged in 12 staggered columns, i.e. in 41 regions of 5 keys each plus 6 duplicate enharmonic keys

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Keyboards ergonomically organised for playing chords or for transposing, e.g. Janko keyboard	<a href="#">G10H 2220/251</a>
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## G10H 2210/461

Jankovski scale or twelfth tone scale, i.e. octave divided in 72 equal intervals, e.g. moria in Byzantine music theory

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Keyboards ergonomically organised for playing chords or for transposing, e.g. Janko keyboard	<a href="#">G10H 2220/251</a>
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## G10H 2210/471

Natural or just intonation scales, i.e. based on harmonics consonance such that most adjacent pitches are related by harmonically pure ratios of small integers

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Natural chords, i.e. adjustment of individual note pitches in order to generate just intonation chords	<a href="#">G10H 2210/586</a>
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## G10H 2210/506

**Danielou 53 interval scale, with note ratios equal to  $(2^p)(3^q)(5^r)$ , with p, q, r positive or negative integers**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Holder scale or Holdrian comma, i.e. 53 equal intervals per octave, with 31 intervals equal to an almost just perfect fifth; Keyboards therefor, e.g. "generalized keyboard" of Robert Holford Macdowall Bosanquet	<a href="#">G10H 2210/451</a>
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## G10H 2210/511

**Arabic scales, i.e. either double harmonic scale or major locrian scale; Vosta or zaid modes**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Equally tempered scale, i.e. note tuning scale in which every pair of adjacent notes has an identical frequency ratio equal to 2 to the power $1/n$ if the scale has n notes per octave	<a href="#">G10H 2210/415</a>
Quarter tone scale, i.e. 24 equal intervals per octave, e.g. for Arabic music	<a href="#">G10H 2210/431</a>

## G10H 2210/515

**Balinese scales, e.g. for gamelan, with instruments played in pairs and tuned slightly apart to produce interference beating ideally at a consistent speed for all pairs of notes in all registers; Balinese pentatonic scales, e.g. Balinese slendro scale, or five-tone modes of the heptatonic pelog scale, itself substantially a 7-note subset of 9-tone equal temperament**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Pentatonal or pentatonic scale, i.e. five pitches or notes per octave, e.g. basic Chinese musical scale, black piano keys, Javanese gamelan slendro scale or Japanese shakuhachi flute	<a href="#">G10H 2210/541</a>
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**G10H 2210/531****Bluenote scale, i.e. 7-tone scale of 2+1+2+1+3+1+2 semitones****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Hexatonic or hexatonic scales, i.e. six pitches or notes per octave, e.g. whole tone scale, augmented scale, Prometheus scale or blues scale	<a href="#">G10H 2210/535</a>
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**G10H 2210/541****Pentatonic or pentatonic scale, i.e. five pitches or notes per octave, e.g. basic Chinese musical scale, black piano keys, Javanese gamelan slendro scale or Japanese shakuhachi flute****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Balinese pentatonic scales, e.g. Balinese slendro scale, or five-tone modes of the heptatonic pelog scale, itself substantially a 7-note subset of 9-tone equal temperament	<a href="#">G10H 2210/515</a>
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**G10H 2210/555****Tonality processing, involving the key in which a musical piece or melody is played****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for automatic key or tonality recognition, e.g. using musical rules or a knowledge base	<a href="#">G10H 2210/081</a>
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**G10H 2210/571****Chords; Chord sequences****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Keyboards ergonomically organised for playing chords or for transposing, e.g. Janko keyboard	<a href="#">G10H 2220/251</a>
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Spint accordion, i.e. mimicking accordions; Electrophonic instruments with one or more typical accordion features, e.g. special accordion keyboards or bellows, electrophonic aspects of mechanical accordions, MIDI-like control therefor	<a href="#">G10H 2230/245</a>
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## G10H 2210/586

**Natural chords, i.e. adjustment of individual note pitches in order to generate just intonation chords**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis, i.e. isolation, extraction or identification of musical elements or musical parameters from a raw acoustic signal or from an encoded audio signal	<a href="#">G10H 2210/031</a>
Chord correction, i.e. modifying one or several notes within a chord, e.g. to correct wrong fingering or to improve harmony	<a href="#">G10H 2210/335</a>
Natural or just intonation scales, i.e. based on harmonics consonance such that most adjacent pitches are related by harmonically pure ratios of small integers	<a href="#">G10H 2210/471</a>

## G10H 2220/005

**Non-interactive screen display of musical or status data**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Remote key fingering indicator, i.e. fingering shown on a display separate from the instrument itself or substantially disjoint from the keys	<a href="#">G10H 2220/041</a>
Graphical user interface [GUI] specifically adapted for electrophonic musical instruments, e.g. interactive musical displays, musical instrument icons or menus; Details of user interactions therewith	<a href="#">G10H 2220/091</a>

## G10H 2220/015

**Musical staff, tablature or score displays, e.g. for score reading during a performance**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for transcription of raw audio or music data to a displayed or printed staff representation or to displayable MIDI-like note-oriented data, e.g. in piano roll format	<a href="#">G10H 2210/086</a>
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Graphical user interface [GUI] for graphical editing of a musical score, staff or tablature	<a href="#">G10H 2220/121</a>
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## G10H 2220/021

**Indicator, i.e. non-screen output user interfacing, e.g. visual or tactile instrument status or guidance information using lights, LEDs or seven segments displays**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Non-interactive screen display of musical or status data	<a href="#">G10H 2220/005</a>
Graphical user interface [GUI] specifically adapted for electrophonic musical instruments, e.g. interactive musical displays, musical instrument icons or menus; Details of user interactions therewith	<a href="#">G10H 2220/091</a>
Key design details; Special characteristics of individual keys of a keyboard, with controlled tactile or haptic feedback effect; Output interfaces therefor	<a href="#">G10H 2220/311</a>

## G10H 2220/081

**Beat indicator, e.g. marks or flashing LEDs to indicate tempo or beat positions**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for extraction of timing, tempo; Beat detection	<a href="#">G10H 2210/076</a>
Rhythm pattern selection, synthesis or composition	<a href="#">G10H 2210/341</a>
Tempo or beat alterations; Music timing control	<a href="#">G10H 2210/375</a>

## G10H 2220/086

**Beats per minute [BPM] indicator, i.e. displaying a tempo value, e.g. in words or as numerical value in beats per minute**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for extraction of timing, tempo; Beat detection	<a href="#">G10H 2210/076</a>
Tempo or beat alterations; Music timing control	<a href="#">G10H 2210/375</a>

**G10H 2220/091**

**Graphical user interface [GUI] specifically adapted for electrophonic musical instruments, e.g. interactive musical displays, musical instrument icons or menus; Details of user interactions therewith**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Input arrangements for interaction between user and computer with interaction techniques based on graphical user interface [GUI]	<a href="#">G06F 3/048</a>
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**G10H 2220/096**

**using a touch screen**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Keyboards on touchscreens, i.e. keys, frets, strings, tablature or staff displayed on a touchscreen display for note input purposes	<a href="#">G10H 2220/241</a>
Personal digital assistant [PDA] or palmtop computing devices used for musical purposes, e.g. portable music players, tablet computers, e-readers or smart phones in which mobile telephony functions need not be used	<a href="#">G10H 2230/015</a>

**G10H 2220/111**

**for graphical orchestra or soundstage control, e.g. on-screen selection or positioning of instruments in a virtual orchestra, using movable or selectable musical instrument icons**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Source positioning in a soundscape, e.g. instrument positioning on a virtual soundstage, stereo panning or related delay or reverberation changes; Changing the stereo width of a musical source	<a href="#">G10H 2210/305</a>
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**G10H 2220/116**

for graphical editing of sound parameters or waveforms, e.g. by graphical interactive control of timbre, partials or envelope

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Waveform editing, i.e. setting or modifying parameters for waveform synthesis	<a href="#">G10H 2250/615</a>
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**G10H 2220/121**

for graphical editing of a musical score, staff or tablature

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Musical analysis for transcription of raw audio or music data to a displayed or printed staff representation or to displayable MIDI-like note-oriented data, e.g. in piano roll format	<a href="#">G10H 2210/086</a>
Musical staff, tablature or score displays, e.g. for score reading during a performance	<a href="#">G10H 2220/015</a>

**G10H 2220/135**

Musical aspects of games or videogames; Musical instrument-shaped game input interfaces

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Background music for games, e.g. videogames	<a href="#">G10H 2210/026</a>
Musical analysis for performance evaluation, i.e. judging, grading or scoring the musical qualities or faithfulness of a performance, e.g. with respect to pitch, tempo or other timings of a reference performance	<a href="#">G10H 2210/091</a>

**G10H 2220/141**

**Games on or about music, i.e. based on musical knowledge, e.g. musical multimedia quizzes**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Teaching music	<a href="#">G09B 15/00</a>
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**G10H 2220/155**

**User input interfaces for electrophonic musical instruments**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Graphical user interface [GUI] specially adapted for electrophonic musical instruments	<a href="#">G10H 2220/091</a>
Input/output arrangements for transferring data in general	<a href="#">G06F 3/00</a>

**G10H 2220/161**

**with 2D or x/y surface coordinates sensing**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Microtonal scale, i.e. continuous scale of pitches, also interval-free input devices, e.g. continuous keyboards for violin, singing voice or trombone synthesis	<a href="#">G10H 2210/401</a>
Graphical user interface [GUI] specifically adapted for electrophonic musical instruments, e.g. interactive musical displays, musical instrument icons or menus	<a href="#">G10H 2220/091</a>

**G10H 2220/165**

**for string input, i.e. special characteristics in string composition or use for sensing purposes, e.g. causing the string to become its own sensor**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Plectrum or pick sensing, e.g. for detection of string striking or plucking	<a href="#">G10H 2220/191</a>
Fret-like switch array arrangements for guitar necks	<a href="#">G10H 2220/301</a>

Transducers, i.e. details, positioning or use of assemblies to detect and convert mechanical vibrations or mechanical strains into an electrical signal, e.g. audio, trigger or control signal	<a href="#">G10H 2220/461</a>
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## G10H 2220/175

using nonmagnetic string materials, e.g. nylon; Sensors specially adapted therefor

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Piezoelectric transducers for vibration sensing or vibration excitation in the audio range; Piezoelectric strain sensing, e.g. as key velocity sensor; Piezoelectric actuators, e.g. key actuation in response to a control voltage	<a href="#">G10H 2220/525</a>
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## G10H 2220/185

Stick input, e.g. drumsticks with position or contact sensors

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Conductor baton movement detection used to adjust rhythm, tempo or expressivity of, e.g. the playback of musical pieces	<a href="#">G10H 2220/206</a>
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## G10H 2220/191

Plectrum or pick sensing, e.g. for detection of string striking or plucking

### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Plectra or similar accessories for playing; Plectrum holders	<a href="#">G10D 3/173</a>
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**G10H 2220/211**

for microphones, i.e. control of musical parameters either directly from microphone signals or by physically associated peripherals, e.g. karaoke control switches or rhythm sensing accelerometer within the microphone casing

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Loudspeakers, microphones, gramophone pick-ups per se	<a href="#">H04R</a>
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**G10H 2220/221**

Keyboards, i.e. configuration of several keys or key-like input devices relative to one another

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Special musical scales, i.e. other than the 12-interval equally tempered scale; Special input devices therefor	<a href="#">G10H 2210/395</a>
Key design details; Special characteristics of individual keys of a keyboard; Key-like musical input devices, e.g. finger sensors, pedals, potentiometers or selectors	<a href="#">G10H 2220/265</a>
Switch matrix, e.g. contact array common to several keys, the actuated keys being identified by the rows and columns in contact	<a href="#">G10H 2220/295</a>

**G10H 2220/236**

representing an active musical staff or tablature, i.e. with key-like position sensing at the expected note positions on the staff

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Keyboards on touchscreens, i.e. keys, frets, strings, tablature or staff displayed on a touchscreen display for note input purposes	<a href="#">G10H 2220/241</a>
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**G10H 2220/251**

**arranged as 2D or 3D arrays; Keyboards ergonomically organised for playing chords or for transposing, e.g. Janko keyboard**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint accordion, i.e. mimicking accordions; Electrophonic instruments with one or more typical accordion features, e.g. special accordion keyboards or bellows, electrophonic aspects of mechanical accordions, MIDI-like control therefor	<a href="#">G10H 2230/245</a>
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**G10H 2220/265**

**Key design details; Special characteristics of individual keys of a keyboard; Key-like musical input devices, e.g. finger sensors, pedals, potentiometers, selectors**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Special musical scales, i.e. other than the 12-interval equally tempered scale; Special input devices therefor	<a href="#">G10H 2210/395</a>
Keyboards, i.e. configuration of several keys or key-like input devices relative to one another	<a href="#">G10H 2220/221</a>

**G10H 2220/271**

**Velocity sensing for individual keys, e.g. by placing sensors at different points along the kinematic path for individual key velocity estimation by delay measurement between adjacent sensor signals**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Keyboards, i.e. configuration of several keys or key-like input devices relative to one another	<a href="#">G10H 2220/221</a>
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**G10H 2220/305****using a light beam to detect key, pedal or note actuation****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Beam sensing or control, light beams	<a href="#">G10H 2220/411</a>
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**G10H 2220/315****for joystick-like proportional control of musical input; Videogame input devices used for musical input or control, e.g. gamepad, joysticks****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Input arrangements for video game devices	<a href="#">A63F 13/20</a>
Manually-actuated control mechanisms provided with one single controlling member being movable by hand about orthogonal axes, e.g. joysticks	<a href="#">G05G 9/047</a>
Pointing devices displaced or positioned by the user, e.g. joysticks, for converting the position or the displacement of a member into a coded form	<a href="#">G06F 3/033</a>

**G10H 2220/321****Garment sensors, i.e. musical control means with trigger surfaces or joint angle sensors, worn as a garment by the player, e.g. bracelet, intelligent clothing****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Vital parameter control of user input interfaces for electrophonic musical instruments, i.e. musical instrument control based on body signals; Biometric information	<a href="#">G10H 2220/371</a>
Input/output arrangements for transferring data in general	<a href="#">G06F 3/00</a>

**G10H 2220/336**

**Control shoe or boot, i.e. sensor-equipped lower part of lower limb, e.g. shoe, toe ring, sock, ankle bracelet or leg control attachment**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Garment sensors, i.e. musical control means with trigger surfaces or joint angle sensors, worn as a garment by the player, e.g. bracelet or intelligent clothing	<a href="#">G10H 2220/321</a>
Floor sensors, e.g. platform or groundsheet with sensors to detect foot position, balance or pressure, steps, stepping rhythm, dancing movements or jumping	<a href="#">G10H 2220/341</a>

**G10H 2220/341**

**Floor sensors, e.g. platform or groundsheet with sensors to detect foot position, balance or pressure, steps, stepping rhythm, dancing movements or jumping**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Control shoe or boot, i.e. sensor-equipped lower part of lower limb, e.g. shoe, toe ring, sock, ankle bracelet or leg control attachment	<a href="#">G10H 2220/336</a>
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**G10H 2220/346**

**Hopscotch sensing mats, i.e. including several step sensing zones, e.g. for detection of rhythmic dancing in time to background music according to stepping indications**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for performance evaluation or scoring	<a href="#">G10H 2210/091</a>
Musical aspects of games or videogames	<a href="#">G10H 2220/135</a>
Video games in general	<a href="#">A63F 13/00</a>

## G10H 2220/365

**Bow control in general, i.e. sensors or transducers on a bow; Input interface or controlling process for emulating a bow, bowing action or generating bowing parameters, e.g. for appropriately controlling a specialised sound synthesiser**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Spint stringed, i.e. mimicking stringed instrument features, electrophonic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor	<a href="#">G10H 2230/075</a>
Bowed string instrument sound generation, controlling specific features of said sound, e.g. use of fret or bow control parameters for violin effects synthesis	<a href="#">G10H 2250/445</a>

## G10H 2220/371

**Vital parameter control, i.e. musical instrument control based on body signals, e.g. brainwaves, pulsation, temperature or perspiration; Biometric information**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Garment sensors, i.e. musical control means with trigger surfaces or joint angle sensors, worn as a garment by the player, e.g. bracelet or intelligent clothing	<a href="#">G10H 2220/321</a>
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## G10H 2220/391

**Angle sensing for musical purposes, using data from a gyroscope, gyrometer or other angular velocity or angular movement sensing device**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Garment sensors, i.e. musical control means with trigger surfaces or joint angle sensors, worn as a garment by the player, e.g. bracelet or intelligent clothing	<a href="#">G10H 2220/321</a>
Acceleration sensing or accelerometer use, e.g. 3D movement computation by integration of accelerometer data, angle sensing with respect to the vertical, i.e. gravity sensing	<a href="#">G10H 2220/395</a>
User input interfaces for electrophonic musical instruments with 3D sensing, i.e. three-dimensional (x, y, z) position or movement sensing	<a href="#">G10H 2220/401</a>

## G10H 2220/395

**Acceleration sensing or accelerometer use, e.g. 3D movement computation by integration of accelerometer data, angle sensing with respect to the vertical, i.e. gravity sensing**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Conductor baton movement detection used to adjust rhythm, tempo or expressivity of, e.g. the playback of musical pieces	<a href="#">G10H 2220/206</a>
Garment sensors, i.e. musical control means with trigger surfaces or joint angle sensors, worn as a garment by the player, e.g. bracelet or intelligent clothing	<a href="#">G10H 2220/321</a>
Angle sensing for musical purposes, using data from a gyroscope, gyrometer or other angular velocity or angular movement sensing device	<a href="#">G10H 2220/391</a>

## G10H 2220/401

**3D sensing, i.e. three-dimensional (x, y, z) position or movement sensing**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

User input interfaces for electrophonic musical instruments for movement interpretation, i.e. capturing and recognizing a gesture or a specific kind of movement, e.g. to control a musical instrument	<a href="#">G10H 2220/201</a>
Geolocation input, i.e. control of musical parameters based on location or geographic position, e.g. provided by GPS, Wi-Fi® network location databases or mobile phone base station position databases	<a href="#">G10H 2220/355</a>
Acceleration sensing or accelerometer use, e.g. 3D movement computation by integration of accelerometer data, angle sensing with respect to the vertical, i.e. gravity sensing	<a href="#">G10H 2220/395</a>

**G10H 2220/405**

**Beam sensing or control, i.e. input interfaces involving substantially immaterial beams, radiation, or fields of any nature, used, e.g. as a switch as in a light barrier, or as a control device, e.g. using the theremin electric field sensing principle**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint theremin, i.e. mimicking electrophonic musical instruments in which tones are controlled or triggered in a touch-free manner by interaction with beams, jets or fields, e.g. theremin, air guitar or water jet controlled musical instrument, i.e. hydrolauphone	<a href="#">G10H 2230/051</a>
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**G10H 2220/411**

**Light beams**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Special characteristics of individual keys of a keyboard using a light beam to detect key, pedal or note actuation	<a href="#">G10H 2220/305</a>
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**G10H 2220/441**

**Image sensing, i.e. capturing images or optical patterns for musical purposes or musical control purposes**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Image analysis	<a href="#">G06T 7/00</a>
Character recognition based on music notations	<a href="#">G06V 30/304</a>

**G10H 2220/445**

**Bar codes or similar machine readable optical code patterns, e.g. two dimensional mesh pattern, for musical input or control purposes**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Methods for sensing record carriers by electromagnetic radiation, e.g. optical sensing	<a href="#">G06K 7/10</a>
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**G10H 2220/461**

**Transducers, i.e. details, positioning or use of assemblies to detect and convert mechanical vibrations or mechanical strains into an electrical signal, e.g. audio, trigger or control signal**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Special adaptations of transducers for use as contact microphones, e.g. on musical instrument	<a href="#">H04R 1/46</a>
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**G10H 2220/565**

**Shielding, electromagnetic or magnetic, e.g. for transducers, i.e. for controlling, orienting or suppressing magnetic fields or for preventing unintentional generation, propagation and reception of electromagnetic energy in electrophonic musical instruments, their vicinity or their interconnections**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Dual coil electrodynamic string transducer, e.g. for humbucking, to cancel out parasitic magnetic fields	<a href="#">G10H 2220/505</a>
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**G10H 2230/015**

**PDA [personal digital assistant] or palmtop computing devices used for musical purposes, e.g. portable music players, tablet computers, e-readers or smart phones in which mobile telephony functions need not be used**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Graphical user interface [GUI] specifically adapted for electrophonic musical instruments using a touch screen	<a href="#">G10H 2220/096</a>
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**G10H 2230/021**

**Mobile ringtone, i.e. generation, transmission, conversion or downloading of ringing tones or other sounds for mobile telephony; Special musical data formats or protocols therefor**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Mobile telephone transmission, i.e. transmitting, accessing or controlling music data wirelessly via a wireless or mobile telephone receiver, analogue or digital, e.g. DECT GSM or UMTS	<a href="#">G10H 2240/251</a>
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**G10H 2230/075**

**Spint stringed, i.e. mimicking stringed instrument features, electrophonic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Gensound string, i.e. generating the sound of a string instrument, controlling specific features of said sound	<a href="#">G10H 2250/441</a>
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**G10H 2230/105**

**Spint dulcimer, i.e. mimicking any zither-like instrument with small hand-played mallet hammers**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint zither, i.e. mimicking any neckless stringed instrument in which the strings do not extend beyond the sounding board	<a href="#">G10H 2230/095</a>
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**G10H 2230/121**

**Spint mandolin, i.e. mimicking instruments of the lute family with hard sounding board, e.g. with strings arranged and tuned in pairs for tremolo playing**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint banjo, i.e. mimicking a stringed instrument with a piece of plastic or animal skin stretched over a circular frame or gourd, e.g. shamisen or other skin-covered lutes	<a href="#">G10H 2230/151</a>
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**G10H 2230/155**

**Spint wind instrument, i.e. mimicking musical wind instrument features; Electroponic aspects of acoustic wind instruments; MIDI-like control therefor**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Mouth control in general, i.e. breath, mouth, teeth, tongue or lip-controlled input devices or sensors detecting, e.g. lip position, lip vibration, air pressure, air velocity, air flow or air jet angle	<a href="#">G10H 2220/361</a>
Natural aerodynamic noises, e.g. wind gust sounds, rustling leaves or beating sails	<a href="#">G10H 2250/431</a>
Gensound wind instruments, i.e. generating or synthesising the sound of a wind instrument, controlling specific features of said sound	<a href="#">G10H 2250/461</a>

**G10H 2230/181**

**Spint trombone, i.e. mimicking trombones or other slide musical instruments permitting a continuous musical scale**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Microtonal scale, i.e. continuous scale of pitches, also interval-free input devices, e.g. continuous keyboards for violin, singing voice or trombone synthesis	<a href="#">G10H 2210/401</a>
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**G10H 2230/185**

**Spint horn, i.e. mimicking conical bore brass instruments**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint clarinet, i.e. mimicking any member of the single reed cylindrical bore woodwind instrument family, e.g. piccolo clarinet, octocontrabass, chalumeau, hornpipes or zhaleika	<a href="#">G10H 2230/241</a>
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**G10H 2230/191**

**Spint French horn, i.e. mimicking an orchestral horn with valves for switching pipe lengths**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint wind instrument, Spint English horn	<a href="#">G10H 2230/231</a>
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**G10H 2230/195**

**Spint flute, i.e. mimicking or emulating a transverse flute or air jet sensor arrangement therefor, e.g. sensing angle or lip position to trigger octave change**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Mouth control in general, i.e. breath, mouth, teeth, tongue or lip-controlled input devices or sensors detecting, e.g. lip position, lip vibration, air pressure, air velocity, air flow or air jet angle	<a href="#">G10H 2220/361</a>
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Spint whistle, i.e. mimicking wind instruments in which the air is split against an edge, e.g. musical whistles, three tone samba whistle, penny whistle or pea whistle; Whistle-emulating mouth interfaces; MIDI control therefor, e.g. for calliope	<a href="#">G10H 2230/161</a>
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## G10H 2230/201

**Spint piccolo, i.e. half-size transverse flute, e.g. ottavino**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Spint clarinet, i.e. mimicking any member of the single reed cylindrical bore woodwind instrument family, e.g. piccolo clarinet, octocontrabass, chalumeau, hornpipes or zhaleika	<a href="#">G10H 2230/241</a>
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## G10H 2230/211

**Spint harmonica, i.e. mimicking mouth operated wind instruments with multiple tuned free reeds, a.k.a. harmonica, blues harp, mouth organ, pitch pipe or ChengGong**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Spint accordion, i.e. mimicking accordions; Electrophonic instruments with one or more typical accordion features, e.g. special accordion keyboards or bellows, electrophonic aspects of mechanical accordions, MIDI-like control therefor	<a href="#">G10H 2230/245</a>
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## G10H 2230/251

**Spint percussion, i.e. mimicking percussion instruments; Electrophonic musical instruments with percussion instrument features; Electrophonic aspects of acoustic percussion instruments or MIDI-like control therefor**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Gensound percussion, i.e. generating or synthesising the sound of a percussion instrument; Control of specific aspects of percussion sounds, e.g. harmonics, under the influence of hitting force, hitting position, settings or striking instruments such as mallet, drumstick, brush or hand	<a href="#">G10H 2250/435</a>
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**G10H 2230/281**

**Spint drum assembly, i.e. mimicking two or more drums or drumpads assembled on a common structure, e.g. drum kit**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint xylophone, i.e. mimicking any multi-toned percussion instrument with a multiplicity of tuned resonating bodies, regardless of their material or shape, e.g. xylophone, vibraphone, lithophone, metallophone, marimba, balafon, ranat, gambang or angklung	<a href="#">G10H 2230/255</a>
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**G10H 2230/351**

**Spint bell, i.e. mimicking bells, e.g. cow-bells**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Resonating devices having the shape of a bell, plate, rod or tube	<a href="#">G10K 1/06</a>
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**G10H 2240/005**

**Data structures for use in electrophonic musical devices; Data structures including musical parameters derived from musical analysis**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Information retrieval of audio data	<a href="#">G06F 16/60</a>
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**G10H 2240/011**

**Files or data streams containing coded musical information, e.g. for transmission**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Coding or decoding of speech or audio signals	<a href="#">G10L 19/00</a>
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**G10H 2240/016****File editing, i.e. modifying musical data files or streams as such****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Graphical user interface [GUI] specifically adapted for electrophonic musical instruments, e.g. interactive musical displays, musical instrument icons or menus; Details of user interactions therewith	<a href="#">G10H 2220/091</a>
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**G10H 2240/026****File encryption of specific electrophonic music instrument file or stream formats, e.g. MIDI, note oriented formats, sound banks, wavetables****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Security arrangements for protecting computers against unauthorised activity, digital rights management [DRM]	<a href="#">G06F 21/00</a>
Arrangements for secret or secure communications; Network security protocols	<a href="#">H04L 9/00</a>

**G10H 2240/041****File watermark, i.e. embedding a hidden code in an electrophonic musical instrument file or stream for identification or authentication purposes****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Audio watermarking	<a href="#">G10L 19/018</a>
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**G10H 2240/046****File format, i.e. specific or non-standard musical file format used in or adapted for electrophonic musical instruments, e.g. in wavetables****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Details of musical waveform synthesis, i.e. audio waveshape processing from individual wavetable samples, independently of their origin or of the sound they represent	<a href="#">G10H 2250/541</a>
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**G10H 2240/066**

**MPEG audio-visual compression file formats, e.g. MPEG-4 for coding of audio-visual objects**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

File format, MP3, i.e. MPEG-1 or MPEG-2 Audio Layer III, lossy audio compression	<a href="#">G10H 2240/061</a>
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**G10H 2240/075**

**Musical metadata derived from musical analysis or for use in electrophonic musical instruments**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Data organisation info, i.e. juxtaposition of unrelated auxiliary information or commercial messages with or between music files	<a href="#">G10H 2240/091</a>
Information retrieval of audio data	<a href="#">G06F 16/60</a>

**G10H 2240/081**

**Genre classification, i.e. descriptive metadata for classification or selection of musical pieces according to style**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis of musical genre, i.e. analysing the style of musical pieces, usually for selection, filtering or classification	<a href="#">G10H 2210/036</a>
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**G10H 2240/091**

**Info, i.e. juxtaposition of unrelated auxiliary information or commercial messages with or between music files**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical metadata derived from musical analysis or for use in electrophonic musical instruments	<a href="#">G10H 2240/075</a>
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**G10H 2240/121**

**Musical libraries, i.e. musical databases indexed by musical parameters, wavetables, indexing schemes using musical parameters, musical rule bases or knowledge bases, e.g. for automatic composing methods**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Information retrieval of audio data	<a href="#">G06F 16/60</a>
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**G10H 2240/151**

**Thumbnail, i.e. retrieving, playing or managing a short and musically relevant song preview from a library, e.g. the chorus**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis for extraction of musical phrases, isolation of musically relevant segments, e.g. musical thumbnail generation, or for temporal structure analysis of a musical piece, e.g. determination of the movement sequence of a musical work	<a href="#">G10H 2210/061</a>
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**G10H 2240/155**

**Library update, i.e. making or modifying a musical database using musical parameters as indices**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Data structures for use in electrophonic musical devices; Data structures including musical parameters derived from musical analysis	<a href="#">G10H 2240/005</a>
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**G10H 2240/161**

**Memory and use thereof, in electrophonic musical instruments, e.g. memory map**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Use of cache memory for electrophonic musical instrument processes, e.g. for improving processing capabilities or solving interfacing problems	<a href="#">G10H 2230/031</a>
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Data structures for use in electrophonic musical devices; Data structures including musical parameters derived from musical analysis	<a href="#">G10H 2240/005</a>
Files or data streams containing coded musical information, e.g. for transmission	<a href="#">G10H 2240/011</a>
Musical libraries, i.e. musical databases indexed by musical parameters, wavetables, indexing schemes using musical parameters, musical rule bases or knowledge bases, e.g. for automatic composing methods	<a href="#">G10H 2240/121</a>

## G10H 2240/171

**Transmission of musical instrument data, control or status information;  
Transmission, remote access or control of music data for electrophonic musical instruments**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Files or data streams containing coded musical information, e.g. for transmission	<a href="#">G10H 2240/011</a>
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## G10H 2240/211

**Wireless transmission, e.g. of music parameters or control data by radio, infrared or ultrasound**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Beam sensing or control, i.e. input interfaces involving substantially immaterial beams, radiation, or fields of any nature, used, e.g. as a switch as in a light barrier, or as a control device, e.g. using the theremin electric field sensing principle	<a href="#">G10H 2220/405</a>
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## G10H 2240/251

**Mobile telephone transmission, i.e. transmitting, accessing or controlling music data wirelessly via a wireless or mobile telephone receiver, analogue or digital, e.g. DECT, GSM, UMTS**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Personal digital assistant [PDA] or palmtop computing devices used for musical purposes, e.g. portable music players, tablet computers, e-readers or smart phones in which mobile telephony functions need not be used	<a href="#">G10H 2230/015</a>
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Mobile ringtone, i.e. generation, transmission, conversion or downloading of ringing tones or other sounds for mobile telephony; Special musical data formats or protocols therefor	<a href="#">G10H 2230/021</a>
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## G10H 2240/295

Packet switched network, e.g. token ring

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Telephone transmission, i.e. using twisted pair telephone lines or any type of telephone network	<a href="#">G10H 2240/241</a>
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## G10H 2240/325

Synchronizing two or more audio tracks or files according to musical features or musical timings

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Lyrics displays, e.g. for karaoke applications	<a href="#">G10H 2220/011</a>
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## G10H 2250/00

Aspects of algorithms or signal processing methods without intrinsic musical character, yet specifically adapted for or used in electrophonic musical processing

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Aspects or methods of musical processing having intrinsic musical character, i.e. involving musical theory or musical parameters or relying on musical knowledge, as applied in electrophonic musical tools or instruments	<a href="#">G10H 2210/00</a>
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**G10H 2250/005**

**Algorithms for electrophonic musical instruments or musical processing, e.g. for automatic composition or resource allocation**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Mathematical functions for musical analysis, processing, synthesis or composition	<a href="#">G10H 2250/131</a>
Details of musical waveform synthesis, i.e. audio waveshape processing from individual wavetable samples, independently of their origin or of the sound they represent	<a href="#">G10H 2250/541</a>

**G10H 2250/021**

**Dynamic programming, e.g. Viterbi, for finding the most likely or most desirable sequence in music analysis, processing or composition**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Sequence estimation using the Viterbi algorithm or Viterbi processors	<a href="#">H03M 13/41</a>
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**G10H 2250/035**

**Crossfade, i.e. time domain amplitude envelope control of the transition between musical sounds or melodies, obtained for musical purposes, e.g. for ADSR tone generation, articulations, medley, remix**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Studio equipment for generating broadcast information; Interconnection of studios	<a href="#">H04H 60/04</a>
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**G10H 2250/041**

**Delay lines applied to musical processing**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Acoustic effect simulation being reverberation or echo	<a href="#">G10H 2210/281</a>
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Time-delay networks comprising electromechanical or electro-acoustic devices	<a href="#">H03H 9/30</a>
Arrangements having a single output and transforming input signals into pulses delivered at desired time intervals using a chain of active delay devices	<a href="#">H03K 5/133</a>

## G10H 2250/055

**Filters for musical processing or musical effects; Filter responses, filter architecture, filter coefficients or control parameters therefor**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Tone control or bandwidth control in amplifiers	<a href="#">H03G 5/00</a>
Combinations of two or more types of control, e.g. gain control and tone control	<a href="#">H03G 9/00</a>
Current or voltage-controlled filters of frequency selective two-port networks using amplifiers with feedback	<a href="#">H03H 11/1291</a>
Networks using digital techniques	<a href="#">H03H 17/00</a>

## G10H 2250/071

**All pole filter, i.e. autoregressive [AR] filter**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Impulse response, i.e. filters defined or specified by their temporal impulse response features, e.g. for echo or reverberation applications, Infinite impulse response [IIR]	<a href="#">G10H 2250/121</a>
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## G10H 2250/075

**All zero filter, i.e. moving average [MA] filter or finite impulse response [FIR] filter**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Finite impulse response [FIR], e.g. for echoes or room acoustics, the shape of the impulse response is specified in particular according to delay times	<a href="#">G10H 2250/115</a>
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**G10H 2250/091****Chebyshev filters****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Chebyshev polynomials, e.g. to provide filter coefficients for sharp roll-off filters	<a href="#">G10H 2250/191</a>
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**G10H 2250/111****Impulse response, i.e. filters defined or specified by their temporal impulse response features, e.g. for echo or reverberation applications****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Acoustic effect simulation, reverberation or echo	<a href="#">G10H 2210/281</a>
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**G10H 2250/115****FIR impulse, e.g. for echoes or room acoustics, the shape of the impulse response is specified in particular according to delay times****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

All zero filter, i.e. moving average [MA] filter or finite impulse response [FIR] filter	<a href="#">G10H 2250/075</a>
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**G10H 2250/121****IIR impulse****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Filter responses, filter architecture, filter coefficients or control parameters therefor, all pole filter, i.e. autoregressive [AR] filter	<a href="#">G10H 2250/071</a>
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**G10H 2250/131**

**Mathematical functions for musical analysis, processing, synthesis or composition**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Algorithms for musical processing	<a href="#">G10H 2250/005</a>
Methods for evaluating functions by calculations	<a href="#">G06F 7/544</a>
Complex mathematical operations	<a href="#">G06F 17/10</a>

**G10H 2250/145**

**Convolution, e.g. of a music input signal with a desired impulse response to compute an output**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Transforms, i.e. mathematical transforms into domains appropriate for musical signal processing, coding or compression	<a href="#">G10H 2250/215</a>
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**G10H 2250/191**

**Chebyshev polynomials, e.g. to provide filter coefficients for sharp rolloff filters**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Filter responses, filter architecture, filter coefficients or control parameters therefor, Chebyshev filters	<a href="#">G10H 2250/091</a>
Chebyshev window	<a href="#">G10H 2250/271</a>

**G10H 2250/211**

**Random number generators, pseudorandom generators, classes of functions therefor**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Shielding, electromagnetic or magnetic, e.g. for transducers, i.e. for controlling, orienting or suppressing magnetic fields or for preventing unintentional generation, propagation and reception of electromagnetic energy in electrophonic musical instruments, their vicinity or their interconnections	<a href="#">G10H 2220/565</a>
Noise generation, its use, control or rejection for music processing	<a href="#">G10H 2250/295</a>
Use of noise in formant synthesis	<a href="#">G10H 2250/495</a>

**G10H 2250/221**

**Cosine transform; DCT [discrete cosine transform], e.g. for use in lossy audio compression such as MP3**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

File format, MP3, i.e. MPEG-1 or MPEG-2 Audio Layer III, lossy audio compression	<a href="#">G10H 2240/061</a>
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**G10H 2250/225**

**MDCT [Modified discrete cosine transform], i.e. based on a DCT of overlapping data**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Adaptive MDCT-based compression, e.g. using a hybrid subband-MDCT, as in ATRAC	<a href="#">G10H 2250/575</a>
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**G10H 2250/271****Chebyshev window****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Chebyshev filters	<a href="#">G10H 2250/091</a>
Chebyshev polynomials, e.g. to provide filter coefficients for sharp roll-off filters	<a href="#">G10H 2250/191</a>

**G10H 2250/295****Noise generation, its use, control or rejection for music processing****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Random number generators, pseudorandom generators for musical analysis, processing, synthesis or composition	<a href="#">G10H 2250/211</a>
Use of noise in formant synthesis	<a href="#">G10H 2250/495</a>
Detection of presence or absence of voice signals for discriminating voice from noise	<a href="#">G10L 25/84</a>
Automatic control in amplifiers having semiconductor devices, being dependent upon ambient noise level or sound level	<a href="#">H03G 3/32</a>

**G10H 2250/305****Noise or artifact control in electrophonic musical instruments****References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Shielding, electromagnetic or magnetic, e.g. for transducers, i.e. for controlling, orienting or suppressing magnetic fields or for preventing unintentional generation, propagation and reception of electromagnetic energy in electrophonic musical instruments, their vicinity or their interconnections	<a href="#">G10H 2220/565</a>
Notch filters for musical processing or musical effects	<a href="#">G10H 2250/125</a>
Aliasing, i.e. preventing, eliminating or deliberately using aliasing noise, distortions or artifacts in sampled or synthesised waveforms, e.g. by band limiting, oversampling or undersampling, respectively	<a href="#">G10H 2250/545</a>

**G10H 2250/311**

**Neural networks for electrophonic musical instruments or musical processing, e.g. for musical recognition or control, automatic composition or improvisation**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Musical analysis	<a href="#">G10H 2210/031</a>
Neural networks	<a href="#">G06N 3/02</a>

**G10H 2250/315**

**Sound category-dependent sound synthesis processes [Gensound] for musical use; Sound category-specific synthesis-controlling parameters or control means therefor**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

General musical sound synthesis principles, i.e. sound category-independent synthesis methods	<a href="#">G10H 2250/471</a>
Details of musical waveform synthesis, i.e. audio waveshape processing from individual wavetable samples, independently of their origin or of the sound they represent	<a href="#">G10H 2250/541</a>

**G10H 2250/365**

**Gensound applause, e.g. handclapping; Cheering; Booing**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Crowds, e.g. restaurant, waiting hall, demonstration or subway corridor at rush hour	<a href="#">G10H 2250/401</a>
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**G10H 2250/401**

**Crowds, e.g. restaurant, waiting hall, demonstration or subway corridor at rush hour**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Gensound applause, e.g. handclapping; Cheering; Booing	<a href="#">G10H 2250/365</a>
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**G10H 2250/431**

**Natural aerodynamic noises, e.g. wind gust sounds, rustling leaves or beating sails**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint wind instrument, i.e. mimicking musical wind instrument features; Electro-phonetic aspects of acoustic wind instruments; MIDI-like control therefor	<a href="#">G10H 2230/155</a>
Gensound wind instruments, i.e. generating or synthesising the sound of a wind instrument, controlling specific features of said sound	<a href="#">G10H 2250/461</a>

**G10H 2250/435**

**Gensound percussion, i.e. generating or synthesising the sound of a percussion instrument; Control of specific aspects of percussion sounds, e.g. harmonics, under the influence of hitting force, hitting position, settings or striking instruments such as mallet, drumstick, brush or hand**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint wind instrument, Spint English horn	<a href="#">G10H 2230/231</a>
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**G10H 2250/441**

**Gensound string, i.e. generating the sound of a string instrument, controlling specific features of said sound**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Spint piano, i.e. mimicking acoustic musical instruments with piano, cembalo or spinet features, e.g. with piano-like keyboard; Electro-phonetic aspects of piano-like acoustic keyboard instruments; MIDI-like control therefor	<a href="#">G10H 2230/065</a>
Spint stringed, i.e. mimicking stringed instrument features, electro-phonetic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor	<a href="#">G10H 2230/075</a>

## G10H 2250/445

**Bowed string instrument sound generation, controlling specific features of said sound, e.g. use of fret or bow control parameters for violin effects synthesis**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Modulation effects, i.e. smooth non-discontinuous variations over a time interval, e.g. within a note, melody or musical transition, of any sound parameter, e.g. amplitude, pitch, spectral response, playback speed	<a href="#">G10H 2210/195</a>
Bow control in general, i.e. sensors or transducers on a bow; Input interface or controlling process for emulating a bow, bowing action or generating bowing parameters, e.g. for appropriately controlling a specialised sound synthesiser	<a href="#">G10H 2220/365</a>
Spint stringed, i.e. mimicking stringed instrument features, electrophonic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor, spint viola	<a href="#">G10H 2230/081</a>
Spint stringed, i.e. mimicking stringed instrument features, electrophonic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor, spint cello	<a href="#">G10H 2230/085</a>

## G10H 2250/451

**Plucked or struck string instrument sound synthesis, controlling specific features of said sound**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Spint harpsichord, i.e. mimicking plucked keyboard instruments, e.g. harpsichord, virginal, muselar, spinet, clavictherium, ottavino, archicembalo	<a href="#">G10H 2230/071</a>
Spint stringed, i.e. mimicking stringed instrument features, electrophonic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor	<a href="#">G10H 2230/075</a>

## G10H 2250/455

**Gensound singing voices, i.e. generation of human voices for musical applications, vocal singing sounds or intelligible words at a desired pitch or with desired vocal effects, e.g. by phoneme synthesis**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Modulation effects	<a href="#">G10H 2210/195</a>
Ensemble, i.e. adding one or more voices, also instrumental voices	<a href="#">G10H 2210/245</a>
Formant synthesis	<a href="#">G10H 2250/481</a>
Parcor synthesis	<a href="#">G10H 2250/505</a>
Speech synthesis; Text to speech systems	<a href="#">G10L 13/00</a>

## G10H 2250/461

**Gensound wind instruments, i.e. generating or synthesising the sound of a wind instrument, controlling specific features of said sound**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Mouth control in general, i.e. breath, mouth, teeth, tongue or lip-controlled input devices or sensors detecting, e.g. lip position, lip vibration, air pressure, air velocity, air flow or air jet angle	<a href="#">G10H 2220/361</a>
Spint wind instrument, i.e. mimicking musical wind instrument features; Electrophonic aspects of acoustic wind instruments; MIDI-like control therefor	<a href="#">G10H 2230/155</a>
Natural aerodynamic noises, e.g. wind gust sounds, rustling leaves or beating sails	<a href="#">G10H 2250/431</a>

## G10H 2250/465

**Reed instrument sound synthesis, controlling specific features of said sound**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Spint reed, i.e. mimicking or emulating reed instruments, sensors or interfaces therefor	<a href="#">G10H 2230/205</a>
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## G10H 2250/471

**General musical sound synthesis principles, i.e. sound category-independent synthesis methods**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Special instrument [spint], i.e. mimicking the ergonomics, shape, sound or other characteristic of a specific acoustic musical instrument category	<a href="#">G10H 2230/045</a>
Sound category-dependent sound synthesis processes [Gensound] for musical use	<a href="#">G10H 2250/315</a>
Details of musical waveform synthesis, i.e. audio waveshape processing from individual wavetable samples, independently of their origin or of the sound they represent	<a href="#">G10H 2250/541</a>

## G10H 2250/481

**Formant synthesis, i.e. simulating the human speech production mechanism by exciting formant resonators, e.g. mimicking vocal tract filtering as in LPC synthesis vocoders, wherein musical instruments may be used as excitation signal to the time-varying filter estimated from a singer's speech**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Helmholtz resonance effect, i.e. using, exciting or emulating air resonance in a cavity	<a href="#">G10H 2210/275</a>
Gensound singing voices, i.e. generation of human voices for musical applications, vocal singing sounds or intelligible words at a desired pitch or with desired vocal effects, e.g. by phoneme synthesis	<a href="#">G10H 2250/455</a>
PARCOR synthesis, i.e. music synthesis using partial autocorrelation techniques, e.g. in which the impulse response of the digital filter in a PARCOR speech synthesizer is used as a musical signal	<a href="#">G10H 2250/505</a>

## G10H 2250/501

**Formant frequency shifting, sliding formants**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Wah-wah spectral modulation, i.e. tone colour spectral glide obtained by sweeping the peak of a bandpass filter up or down in frequency, e.g. according to the position of a pedal, by automatic modulation or by voice formant detection; Control devices therefor, e.g. wah pedals for electric guitars	<a href="#">G10H 2210/231</a>
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## G10H 2250/505

**Parcor synthesis, i.e. music synthesis using partial autocorrelation techniques, e.g. in which the impulse response of the digital filter in a parcor speech synthesizer is used as a musical signal**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Gensound singing voices, i.e. generation of human voices for musical applications, vocal singing sounds or intelligible words at a desired pitch or with desired vocal effects, e.g. by phoneme synthesis	<a href="#">G10H 2250/455</a>
Formant synthesis, i.e. simulating the human speech production mechanism by exciting formant resonators, e.g. mimicking vocal tract filtering as in LPC synthesis vocoders, wherein musical instruments may be used as excitation signal to the time-varying filter estimated from a singer's speech	<a href="#">G10H 2250/481</a>

## G10H 2250/511

**Physical modelling or real-time simulation of the acoustomechanical behaviour of acoustic musical instruments using, e.g. waveguides or looped delay lines**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Systems involving the use of models or simulators of said systems	<a href="#">G05B 17/00</a>
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## G10H 2250/531

**Room models, i.e. acoustic physical modelling of a room, e.g. concert hall**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Acoustic effect simulation, reverberation or echo	<a href="#">G10H 2210/281</a>
Soundscape or sound field simulation, reproduction or control for musical purposes, e.g. surround or 3D sound; Granular synthesis	<a href="#">G10H 2210/301</a>

**G10H 2250/541**

**Details of musical waveform synthesis, i.e. audio waveshape processing from individual wavetable samples, independently of their origin or of the sound they represent**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Special instrument [spint], i.e. mimicking the ergonomics, shape, sound or other characteristic of a specific acoustic musical instrument category	<a href="#">G10H 2230/045</a>
Sound category-dependent sound synthesis processes [Gensound] for musical use	<a href="#">G10H 2250/315</a>
General musical sound synthesis principles, i.e. sound category-independent synthesis methods	<a href="#">G10H 2250/471</a>

**G10H 2250/561**

**Parabolic waveform approximation, e.g. using second order polynomials or parabolic responses**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Parabolic or second order polynomials, occurring, e.g. in vacuum tube distortion modelling or for modelling the gate voltage to drain current relationship of a JFET	<a href="#">G10H 2250/201</a>
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**G10H 2250/565**

**Polynomial waveform approximation, i.e. using polynomials of third order or higher**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Third order polynomials, occurring, e.g. in vacuum tube distortion modelling	<a href="#">G10H 2250/205</a>
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**G10H 2250/571**

**Waveform compression, adapted for music synthesisers, sound banks or wavetables**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Speech or audio signals analysis-synthesis techniques for redundancy reduction	<a href="#">G10L 19/00</a>
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**G10H 2250/575**

**Adaptive MDCT-based compression, e.g. using a hybrid subband-MDCT, as in ATRAC**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Modified discrete cosine transform [MDCT], i.e. based on a discrete cosine transform [DCT] of overlapping data	<a href="#">G10H 2250/225</a>
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**G10H 2250/615**

**Waveform editing, i.e. setting or modifying parameters for waveform synthesis**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Graphical user interface [GUI] specifically adapted for electrophonic musical instruments for graphical editing of sound parameters or waveforms, e.g. by graphical interactive control of timbre, partials or envelope	<a href="#">G10H 2220/116</a>
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**G10H 2250/631**

**Waveform resampling, i.e. sample rate conversion or sample depth conversion**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Waveform decimation, i.e. integer division of the sampling rate for reducing the number of samples in a discrete-time signal, e.g. by low-pass anti-alias filtering followed by the actual downsampling	<a href="#">G10H 2250/611</a>
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