

CPC**COOPERATIVE PATENT CLASSIFICATION****G01T**

MEASUREMENT OF NUCLEAR OR X-RADIATION(radiation analysis of materials, mass spectrometry [G01N](#); counters per se [G06M](#), [H03K](#); electric discharge tubes for analysing radiation or particles [H01J 40/00](#) , [H01J 47/00](#) , [H01J 49/00](#))

NOTE

This subclass covers the measurement of X-radiation, gamma radiation, corpuscular radiation, cosmic radiation or neutron radiation.

Attention is drawn to the Notes following the title of class [G01](#).

G01T 1/00

Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic radiation([G01T 3/00](#) , [G01T 5/00](#) take precedence)

G01T 1/003

. {Scintillation (flow) cells}

G01T 1/006

. {Total absorption calorimeters; Shower detectors}

G01T 1/02

. Dosimeters([G01T 1/15](#) takes precedence, measuring exposure time to X-rays [H05G 1/28](#))

G01T 1/023

.. {Scintillation dose-rate meters}

G01T 1/026

.. {Semiconductor dose-rate meters}

G01T 1/04

.. Chemical dosimeters([G01T 1/06](#) , [G01T 1/08](#) take precedence)

G01T 1/06

.. Glass dosimeters{using colour change; including plastic dosimeters}

G01T 1/08

.. Photographic dosimeters(sensitive materials, processing thereof [G03C](#) ; { photometry [G01J 1/52](#)})

G01T 1/10

.. Luminescent dosimeters

G01T 1/105

... Read-out devices([G01T 1/115](#) takes precedence)

G01T 1/11

... Thermo-luminescent dosimeters{(thermo-luminescent compositions [C09K 11/00](#))}

G01T 1/115

.... Read-out devices

G01T 1/12

.. Calorimetric dosimeters

G01T 1/14

.. Electrostatic dosimeters(construction of ionisation chambers [H01J 47/02](#) ; { electrometers [G01R 5/28](#)})

G01T 1/142

... Charging devices; Read-out devices

G01T 1/15

. Instruments in which pulses generated by a radiation detector are integrated, e.g. by a diode pump circuit(pulse rate meters in general [G01R 23/02](#))

G01T 1/16

. Measuring radiation intensity([G01T 1/29](#) takes precedence; { self-powered detectors [G01T 3/006](#) ; using an ionisation chamber filled with a liquid or solid, e.g. frozen liquid, dielectric [G01T 3/008](#)})

G01T 1/1603

.. {with a combination of at least two different types of detector(see provisionally also [G01T 1/16](#))}

G01T 1/1606	..	{ with other specified detectors not provided for in the other sub-groups of G01T 1/16 (see provisionally also G01T 1/16)}
G01T 1/161	..	Application in the field of nuclear medicine, e.g. in vivo counting({ apparatus for radiation diagnosis A61B 6/00)}
G01T 1/1611	...	{using both transmission and emission sources sequentially(SPECT imaging G01T 1/1642 ; PET imaging G01T 1/2985 ; detecting hidden objects, e.g. weapons, explosives G01V 5/00D)}
G01T 1/1612	....	{with scintillation detectors(G01T 1/20 takes precedence)}
G01T 1/1614	....	{with semiconductor detectors(G01T 1/24 takes precedence)}
G01T 1/1615	...	{using both transmission and emission sources simultaneously(SPECT imaging G01T 1/1642 ; PET imaging G01T 1/2985 ; detecting hidden objects, e.g. weapons, explosives G01V 5/00D)}
G01T 1/1617	....	{with scintillation detectors(G01T 1/20 takes precedence)}
G01T 1/1618	....	{with semiconductor detectors(G01T 1/24 takes precedence)}
G01T 1/163	...	Whole body counters{ hand or feet contamination measurement G01T 1/167 ; lung, brain, thyroid, kidney or the like counting G01T 1/16 }
G01T 1/1635	....	{involving relative movement between detector and subject; scanning beds(profile scanning G01T 1/166 ; positioning patients, tiltable tables for radiation diagnosis A61B 6/04)}
G01T 1/164	...	Scintigraphy(radioisotopes G21G 4/00 ; tracers G21H 5/00 ; { measurement of spatial distribution G01T 1/2914 ; apparatus for radiation diagnosis in different planes A61B 6/02)}
G01T 1/1641	....	{Static instruments for imaging the distribution of radioactivity in one or two dimensions using one or several scintillating elements; Radio-isotope cameras}
G01T 1/1642	.....	{using a scintillation crystal and position sensing photodetector arrays, e.g. ANGER cameras}
G01T 1/1644	.....	{using an array of optically separate scintillation elements permitting direct location of scintillations(G01T 1/1645 takes precedence)}
G01T 1/1645	.....	{using electron optical imaging means, e.g. image intensifier tubes, coordinate photomultiplier tubes, image converter}
G01T 1/1647	.....	{Processing of scintigraphic data(not related to a particular imaging system G01T 1/2992)}
G01T 1/1648	.....	{Ancillary equipment for scintillation cameras e.g. reference markers, devices for removing motion artifacts, calibration devices(adapted for flow studies G01T 1/1647)}
G01T 1/166	....	involving relative movement between detector and subject({ scanners in general without using scintigraphy G01T 1/2964)}
G01T 1/1663	.....	{Processing methods of scan data, e.g. involving contrast enhancement, background reduction, smoothing, motion correction, dual radio-isotope scanning, computer processing(for measuring spatial distribution of radiation G01T 1/2992 ; general purpose image data processing G06T 1/00 ; computerized tomography G06T 11/003); Ancillary equipment(colour printers G01T 1/1666)}
G01T 1/1666	.....	{adapted for printing different symbols or colours according to the intensity or energy level of the detected radioactivity(depth discrimination in colour G01T 1/2985)}

- G01T 1/167 .. Measuring radioactive content of objects, e.g. contamination([whole body counters G01T 1/163](#))
- G01T 1/169 .. Exploration, location of contaminated surface areas([prospecting by the use of nuclear radiation e.g. of natural or induced radioactivity G01V 5/00](#)){in situ measurement, e.g. [floor contamination monitor\(directional detectors G01T 1/2907\)](#)}
- G01T 1/17 .. Circuit arrangements not adapted to a particular type of detector{([pulse-selection circuits H03K](#) , [G01R](#))}
- G01T 1/171 ... {[Compensation of dead-time counting losses](#)(see provisionally also [G01T 1/17](#))}
- G01T 1/172 ... with coincidence circuit arrangements([G01T 1/178](#) takes precedence; { combination of detectors, see [G01T 1/1603](#) , [G01T 1/30](#) , [G01T 1/361](#))}
- G01T 1/175 ... Power supply circuits([power supply circuits per se H02J](#) ; converters [H02M](#))
- G01T 1/178 ... for measuring specific activity in the presence of other radioactive substances, e.g. natural, in the air or in liquids such as rain water
- G01T 1/18 .. with counting-tube arrangements, e.g. with Geiger counters([tubes H01J 47/08](#) ; { with alarm provision [G01T 7/125](#))}
- G01T 1/185 .. with ionisation chamber arrangements([construction of ionisation chambers H01J 47/02](#) ; { [gas analysis by ionisation G01N 27/66](#) ; measuring pressure [G01L 9/00](#) ; leak detection [G01M 3/00](#) ; tele-measurements [G08C](#))}
- G01T 1/20 .. with scintillation detectors
- G01T 1/2002 ... {[Optical details, e.g. reflecting or diffusing layers](#)}
- G01T 1/2004 ... {[Scintilloscopes\(fluoroscopes G21K 4/00](#) ; radiation diagnosis [A61B 6/00](#))}
- G01T 1/2006 ... {using a combination of a scintillator and photodetector which measures the means radiation intensity}
- G01T 1/2008 ... {using a combination of different types of scintillation detectors, e.g. phoswich}

WARNING

Pending reclassification, for subject-matter regarding phoswich see also [G01T 1/20](#)

- G01T 1/201 ... {using scintillating fibres}

WARNING

Not complete, see also [G01T 1/2992](#)

- G01T 1/2012 ... {using stimuable phosphors, e.g. stimuable phosphor sheets}

WARNING

This group and subgroups are not complete pending reclassification; see also group [G01T 1/2992](#)

- G01T 1/2014 {Reading out of stimuable sheets, e.g. latent image}
- G01T 1/2016 {Erasing of stimuable sheets, e.g. with light, heat or the like}
- G01T 1/2018 ... {Scintillation-photodiode combination}
- G01T 1/202 ... the detector being a crystal

G01T 1/2023	....	{Selection of materials(see provisionally also G01T 1/202)}
G01T 1/2026	....	{Well-type detectors(see provisionally also G01T 1/202)}
G01T 1/203	...	the detector being made of plastics
G01T 1/2033	....	{Selection of materials(see provisionally also G01T 1/203)}
G01T 1/2036	....	{Well-type detectors(see provisionally also G01T 1/203)}
G01T 1/204	...	the detector being a liquid
G01T 1/2042	....	{Composition for liquid scintillation systems}
G01T 1/2045	.....	{Liquid scintillation quench systems}
G01T 1/2047	.....	{Sample preparation}
G01T 1/205	...	the detector being a gas
G01T 1/208	...	Circuits specially adapted for scintillation detectors, e.g. for the photo-multiplier section
G01T 1/22	..	with Cerenkov detectors
G01T 1/24	..	with semiconductor detectors(semiconductor devices per se H01L 31/00)
G01T 1/241	...	{Electrode arrangements, e.g. continuous or parallel strips or the like(constructional or manufacturing details H01L 31/00)}
G01T 1/242	...	{Stacked detectors, e.g. for depth information}(constructional or manufacturing details H01L 25/00)}
G01T 1/243	...	{Modular detectors, e.g. arrays formed from self contained units(constructional or manufacturing details H01L 25/00)}
G01T 1/244	...	{Auxiliary details, e.g. casings, cooling, damping or insulation against damage by e.g. heat, pressure or the like}
G01T 1/245	...	{using memory cells}
G01T 1/246	...	{utilizing latent read-out, e.g. charge stored and read-out later}
G01T 1/247	...	{Detector read-out circuitry(for processing gain or off-set correction H04N)}
G01T 1/248	...	{Silicon photomultipliers [SiPM], e.g. an avalanche photodiode [APD] array on a common Si substrate}
G01T 1/249	...	{specially adapted for use in SPECT or PET(SPECT imaging G01T 1/1642 ; PET imaging G01T 1/2985 ; detecting hidden objects, e.g. weapons, explosives G01V 5/00D)}
G01T 1/26	..	with resistance detectors(photoresistors H01L 31/00)}
G01T 1/28	..	with secondary-emission detectors(secondary-electron-emitting electrodes in general H01J 1/32) {optionally combined with scintillation counters(secondary emission tubes H01J 43/00)}
G01T 1/29	.	Measurement performed on radiation beams, e.g. position or section of the beam; Measurement of spatial distribution of radiation(scintigraphy G01T 1/164 ; mass-spectrometers H01J 49/025)
G01T 1/2907	..	{Angle determination; Directional detectors; Telescopes(prospecting by the use of nuclear radiation, e.g. of natural or induced radioactivity G01V 5/00)}
G01T 1/2914	..	{Measurement of spatial distribution of radiation}
G01T 1/2921	...	{Static instruments for imaging the distribution of radioactivity in one or two dimensions; Radio-isotope cameras(using scintigraphy G01T 1/1641)}
G01T 1/2928	....	{using solid state detectors}

- G01T 1/2935 {using ionisation detectors}
- G01T 1/2942 {using autoradiographic methods}
- G01T 1/295 {using coded aperture devices e.g. Fresnel zone plates(handling of radiation of particles e.g. using diaphragms, collimators, diffraction [G21K 1/00](#))}
- G01T 1/2957 {using channel multiplier arrays(channel multipliers [H01J 43/18](#) ; [G01T 1/1645](#) takes precedence)}
- G01T 1/2964 . . . {Scanners(using scintigraphy [G01T 1/166](#))}
- G01T 1/2971 {using solid state detectors}
- G01T 1/2978 . . . {Hybrid imaging systems, e.g. using a position sensitive detector (camera) to determine the distribution in one direction and using mechanical movement of the detector or the subject in the other direction or using a camera to determine the distribution in two dimensions and using movement of the camera or the subject to increase the field of view([G01T 1/2985](#) takes precedence)}
- G01T 1/2985 . . . {In depth localisation e.g. using positron emitters; Tomographic imaging(longitudinal and transverse section imaging; apparatus for radiation diagnosis sequentially in different planes, stereoscopic radiation diagnosis);(using external radiation sources [A61B 6/02](#))}
- G01T 1/2992 . . . {Radioisotope data or image processing not related to a particular imaging system; Off-line processing of pictures, e.g. rescanners(for measuring radiation intensity [G01T 1/1663](#) ; digital computing or data processing equipment or methods specially adapted for nuclear physics or nuclear engineering **G06F 15/52** ; general purpose image data processing [G06T 1/00](#) ; computerized tomography [G06T 11/003](#))}
- G01T 1/30 . Measuring half-life of a radioactive substance{([period meters for nuclear fission reactors G21C 17/14](#))}
- G01T 1/32 . Measuring polarisation of particles
- G01T 1/34 . Measuring cross-section, e.g. absorption cross-section of particles
- G01T 1/36 . Measuring spectral distribution of X-rays or of nuclear radiation{spectrometry(pulse selection circuits per se [H03K](#) ; investigation of materials by radiation diffraction [G01N 23/20](#) ; spectrometer tubes [H01J 49/00](#))}
- G01T 1/361 . . {with a combination of detectors of different types, e.g. anti-Compton spectrometers(intensity measurement with a combination of detectors [G01T 1/1603](#) ; with coincidence circuit [G01T 1/172](#) ; se provisionally also [G01T 1/36](#))}

NOTE

[G01T 1/361](#) takes precedence over [G01T 1/362](#)

- G01T 1/362 . . {with scintillation detectors(see provisionally also [G01T 1/36](#) , [G01T 1/20](#))}
- G01T 1/363 . . {with Cerenkov detectors}
- G01T 1/365 . . {with ionisation detectors e.g. proportional counter(see provisionally also [G01T 1/36](#))}
- G01T 1/366 . . {with semi-conductor detectors(see provisionally also [G01T 1/36](#))}
- G01T 1/367 . . {with resistance detectors(see provisionally also [G01T 1/36](#))}

- G01T 1/368 . . {with secondary-emission detectors(see provisionally [G01T 1/36](#))}
- G01T 1/38 . . Particle discrimination and measurement of relative mass, e.g. by measurement of loss of energy with distance (dE/dx){([constructional details of semiconductor detectors therefor H01L 31/00](#))}
- G01T 1/40 . . Stabilisation of spectrometers{([circuits specially adapted for scintillation detectors G01T 1/208](#))}

- G01T 3/00** **Measuring neutron radiation**([G01T 5/00](#) takes precedence; { tubes therefor [H01J 47/12](#) ; circuits with such tubes [G01T 1/18](#) ; measuring short time intervals [G04F 10/00](#) ; measuring pulse characteristics [G01R 29/02](#) ; neutron choppers [G21K 1/04](#) ; polarimeters [G01T 1/32](#))}

- G01T 3/001 . {Spectrometry}
- G01T 3/003 . . {Recoil spectrometers([light-nuclei recoil ionisation tubes per se H01J 47/1277](#))}
- G01T 3/005 . . {Time-of-flight spectrometers(see provisionally also [G01T 3/00](#))}

- G01T 3/006 . {using self-powered detectors(for neutrons as well as for Y- or X-rays), e.g. using Compton-effect(Compton diodes)or photo-emission or a (n,B) nuclear reaction(photovoltaic semiconductors [H01L 31/00](#) ; photo-tubes [H01J 40/00](#) ; thermionic generators [H01J 45/00](#) ; radioisotopic generators [G21H 1/00](#) , e.g. [G21H 1/02](#), [G21H 1/04](#))}

- G01T 3/008 . {using an ionisation chamber filled with a gas, liquid or solid, e.g. frozen liquid, dielectric([G01T 3/006](#) takes precedence)}

- G01T 3/02 . by shielding other radiation

- G01T 3/04 . using calorimetric devices

- G01T 3/06 . with scintillation detectors
- G01T 3/065 . . {Spectrometry}

- G01T 3/08 . with semiconductor detectors([semiconductor detectors per se H01L 31/00](#))
- G01T 3/085 . . {Spectrometry}

- G01T 5/00** **Recording of movements or tracks of particles**([spark chambers H01J 47/00](#)); **Processing or analysis of such tracks**

- G01T 5/002 . {using a combination of several movement of track recording devices(detectors associated with recording chambers and only serving to trigger these chambers, see the appropriate groups of the chamber e.g. [G01T 5/04](#) - [G01T 5/08](#) ; see provisionally also [G01T 5/00](#) and other sub-groups)}

- G01T 5/004 . {Non-electrical readout of multi-wire or parallel-plate chambers(non-electrical readout in such chambers per se [H01J 47/22](#))}

- G01T 5/006 . . {by optical methods}
- G01T 5/008 . . {by acoustical methods}

- G01T 5/02 . Processing of tracks; Analysis of tracks
- G01T 5/04 . Cloud chambers, e.g. Wilson chamber
- G01T 5/06 . Bubble chambers
- G01T 5/08 . Scintillation chambers([discharge tubes H01J 40/00](#) , [H01J 47/00](#) ; [semiconductor devices H01L](#))
- G01T 5/10 . Plates or blocks in which tracks or nuclear particles are made visible by after-treatment, e.g. using photographic emulsion, using mica
- G01T 5/12 . Circuit arrangements with multi-wire or parallel-plate chambers, e.g. spark chambers([tubes per se H01J 47/00](#))
- G01T 5/122 . . {for readout of each individual wires;([readout in such chambers per se H01J 47/16](#)); for processing the output signals}
- G01T 5/125 . . . {by using delay lines}
- G01T 5/127 {by using magnetostrictive delay lines}

- G01T 7/00 Details of radiation-measuring instruments**

- G01T 7/005 . {[calibration techniques\(stabilization of spectrometer G01T 1/40\)](#)}

- G01T 7/02 . Collecting means for receiving or storing samples to be investigated{[and possibly directly transporting the samples to the measuring arrangement; particularly for investigating radioactive fluids\(sampling, preparing specimens for investigation in general G01N 1/00 , G01N 1/02 ; shielded cells or rooms structurally combined with manipulatoin devices G21F ; measuring of chromatographically separated samples G01N 30/00 to G01N 30/96\)](#)}

- G01T 7/04 . . by filtration
- G01T 7/06 . . by electrostatic precipitation([G01T 7/04 takes precedence](#))

- G01T 7/08 . Means for conveying samples received{([i.e. sample changers G01N 35/00](#))}
- G01T 7/10 . . using turntables

- G01T 7/12 . Provision for actuation of an alarm
- G01T 7/125 . . {[Alarm- or controlling circuits using ionisation chambers, proportional counters or Geiger-Mueller tubes, also functioning as UV detectors\(measuring radiation intensity with counting tubes G01T 1/18 ; measuring radiation intensity with ionisation chambers G01T 1/185 ; fire alarms actuated by presence of radiation of particles, e.g. of infra-red radiation, of ions G08B 17/11 ; flame monitoring in combustion devices F23Q 7/00 , F23N ; discharge tubes per se H01J 47/00\)](#)}