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System theremino

Geiger tubes

Geiger tubes

To each tube are indicated: sensitivity, spurious counts caused by the intrinsic radioactive background, approximate price and any notes.

Geiger tubes from old stock Russian military

STS-5

Sens: 24 CPS/mR/h
Bkg: 0.25 CPS
Price 15 €
Voltage: 400 volts
Nominal resistor: 5.6 mega
Rays: Beta + Gamma



SBM-20

Sens: 24 CPS/mR/h
Bkg: 0.4 CPS
Price 20 €
Voltage: 400 volts
Nominal resistor: 5.6 mega
Rays: Beta + Gamma



SI-29BG

Sens: 18 CPS/mR/h
Bkg: 0.15 CPS
Price 25 €
Voltage: 400 volts
Nominal resistor: 5.6 mega
Rays: Beta + Gamma



American Geiger tubes of recent production

LND 712

Sens: 18 CPS/mR/h
Bkg: 0.15 CPS
Price 60 €
Voltage: 500 volts
Nominal resistor: 10 mega
Rays: Alpha + Beta + Gamma



Note:

Not very sensitive, sensitivity to UV Alfa builds him up a bit, but ultimately is not much better Russian tubes.

LND 7312

Sens: 60 CPS/mR/h
Bkg: 0.5 CPS
Price 150 €
Voltage: 500 volts
Nominal resistor: 4.7 mega
Rays: Alpha + Beta + Gamma



Note:

Large, heavy and delicate (diameter 53 mm)
Expensive and difficult to assemble.

Makes it approximately twice as all other Geiger and even up to ten times if the source emits primarily alpha rays.

The advantage that is achieved in practice is only a shortening of the measurement time and does not justify the expense and the sensitivity of this sensor except for laboratory applications.

Characteristics of the Geiger tubes

The most common Geiger tubes, which are also the best, are collected in this list with their main characteristics.

Sensor	Sensitivity (Cps/mR/h)	BKG (Cps)	Dead Time (US)	Operating voltage (Volt)	Limiting resistance (Mega)	Wall material density (mg/cm2)	Active area length (mm)	Active area diam. (mm)	Active area (cm2)	Length or depth / diameter (mm / mm)	Price approx. (Euro)
4xSBM20	116	0.80	190	400	4.7	40	90	---	36	---	80
SI-8B	111	1.00	160	400	4.7	---	---	---	30	20 / 80	85
LND7312	60	0.35	40	500	4.7	1.8	13	44	20	13 / 54	120
2xSBM20	58	0.40	190	400	4.7	40	90	---	18	---	40
VA-Z-115-1	32	0.06	150	450	4.7	35	27	---	---	52 / 13	25
SBM20	29	0.20	190	400	4.7	40	90	10	9	108 / 11	20
STS5	29	0.16	190	400	4.7	40	90	10	9	110 / 11	18
SI-29BG	18	0.07	95	400	4.7	---	---	---	---	55 / 11	20
LND712	18	0.10	90	500	10	1.8	38	9	3.5	49 / 15	70
GMT-01	18	0.10	90	500	10	1.8	38	9	3.5	49 / 15	70

All Geiger tubes have a very broad range of operating voltage, for example the LND712 can operate from 325 volts up to 650 volts and over.

Even far surpassing the maximum voltage does not damage the tubes, provided that the current is limited with the right resistor.

Remains necessary to stabilize well the supply voltage so as to ensure a constant sensitivity.

To ensure a long life to the Geiger tube and does not degrade the character of Dead-Time is important to keep a very low capacity anode tube (connection between the resistor and the positive pole of the tube) so no connectors or wires shielded and the maximum length of the wire Connection of a few centimeters.