Radeo

Measurement services with the Cube n/y

Cube n/y

Innovative detector based on segmented organic and inorganic scintillators containing ^{6}Li

Improve your diagnostic capabilities with a compact neutron/gamma detector designed for accurate source localization and detailed data characterization.

Use cases

- Dosimetry neutron H*(10)
- Spectroscopy of the neutron flux
- Locating the source of neutron fluxes
- Design of adapted neutron biological shielding
- Analysis of gamma contribution in real time
- Locating gamma sources

What's inside the Cube?

The Cube n/y is a novel detection system for neutron and gamma-ray radiation fields mapping and characterisation in complex environments. Source localisation, dose rates and neutron spectrum can be obtained in less than an hour of exposure time (MBq source activity at a few meters distance).

Thanks to the multi-faceted algorithm NFACET, the n/y Cube can be adapted for a wide range of applications. NFACET algorithm is based on a neural network.

Contact Radeo to discuss your needs!

Assets

Mobile

Battery operated. **8.5-hour operating** time (extendable on request)

Directional

Neutron and gamma ray direction reconstruction with an **accuracy up to 1°**

Enhanced sensitivity

Minimum detectable neutron dose rate: **10 nSv/h**

Large operating range

Measurable neutron energy range: **from thermal to fast (>10 MeV)**

Real time detection

Quick dose assessment, 1st results obtained from 50000 particles detected

Neutron vs gamma

Rejection factor higher than ^{3}He tubes for neutron/gamma discrimination

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Improve your diagnostic capabilities with a compact neutron/gamma detector designed for accurate source localization and detailed data characterization.

Radeo, your single point of contact for:

- **Rental** of the detector
- **Commissioning the detector** (installation, functional checks, calibration)
- **Measurement**, analysis and interpretation services

The supply of a technical note is associated with each service implementing the Cube n/γ.

Your contact person

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Radeo offers innovative measurement services based on laboratory prototypes with a high level of technological readiness.

The Cube n/γ is the result of a collaboration between Radeo and a public research laboratory.

Specifications

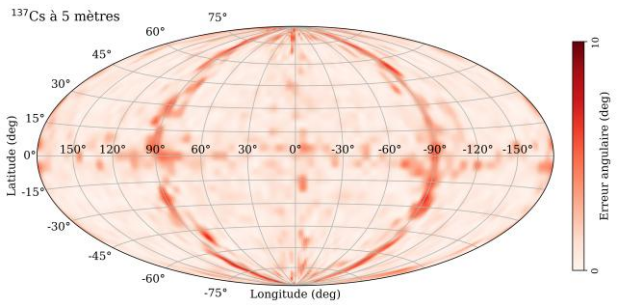
Sizes	25 x 25 x 27 cm^3	**Field of view**	4π str
Weight (excluding battery)	11 kg	**Output values**	H*, H, E (Sv)
Neutron energy range	1 meV – 20 MeV	**Dosimetry range H*(10)**	10 nSv/h – 1 mSv/h
Gamma energy range	60 keV – 10 MeV	**Power supply**	Wired or battery

The neutron-gamma cube is a detector under development. **New functions** may be added.

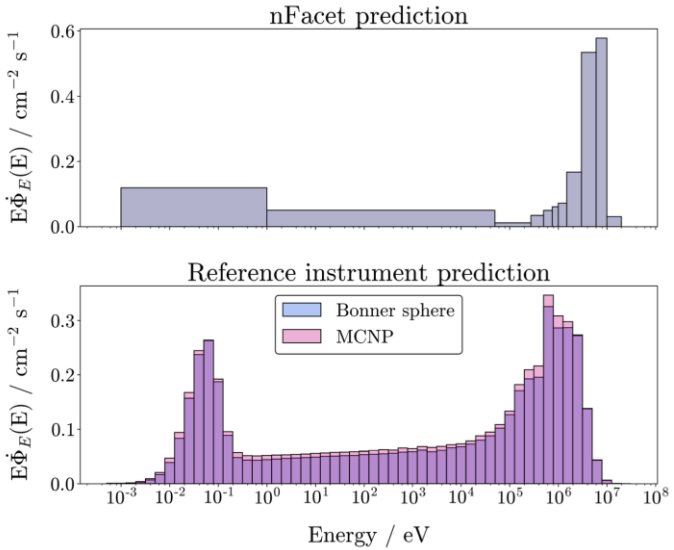
Tell us what you need, and we are sure the Cube will meet your expectations.

Performances

Source	Difference between the reference H*(10) dose measurement and the cube measurement
^{252}Cf @ 1,5 m	< 20 %
AmBe @ 0,805 m	< 20 %



Uniformity of the cube response for a 4π mesh of a ^{137}Cs source with a 5° step. The red areas indicate the reconstructed coordinates with the greatest deviation from the actual measurement position.



Post-processing response obtained in few minutes of the cube to neutron flux as a function of energy (top) and comparison between MCNP calculations and measurements with Bonner spheres (bottom).