NEUTRON REM COUNTER FOR PULSED FIELDS

LUPIN BF3-NP

MAIN FEATURES

- ***Only detector world-wide efficiently working in pulsed fields***
- ***Modular electronics***
- ***High sensitivity***
- ***Fully customizable for specific requirements of particle accelerator facilities***
- Energy range: from thermal up to 10 GeV
- Energy response closely resembles the ICRP74 conversion curve
- Unaffected by signal pile-up and so particularly suited for pulsed neutron fields
- Max H*(10) per burst in pulsed fields: 2 µSv
- Connectable to SATURN ratemeters
- Excellent gamma rejection (< 0.5 µSv/h at 50 mSv/h, 662 keV)

DESCRIPTION

The environmental monitoring unit **LUPIN BF3-NP** is a modular system for neutron H*(10) measurements, with excellent performance for neutron detection in pulsed fields.

The instrument is composed by the following parts:

- BF_3 neutron proportional counter
- Cylindrical moderating assembly
- Built-in power supply, signal acquisition and processing, and control electronics

The built-in electronics processes the signal coming from the detector and elaborates the instantaneous H*(10) rate value every second.

The data are sent to the connected SATURN ratemeter, which locally displays the instantaneous H*(10) rate and the integrated values and compares them to the pre-set alarm thresholds.

Optional: radiation sensitive electronics installed in a separate rack

Papers published in international scientific journals:

- ❖ *M. Caresana, M. Ferrarini, G.P. Manessi, M. Silari and V. Varoli, LUPIN, a new instrument for pulsed neutron fields, Nuclear Instruments and Methods in Physics Research Section A 712 (2013) 15-26.*
- ❖ *M. Caresana, C. Cassell, M. Ferrarini, E. Hohmann, G.P. Manessi, S. Mayer, M. Silari and V. Varoli, A new version of the LUPIN detector: improvements and latest experimental verification, Review of Scientific Instruments 85 (2014) 065102.*

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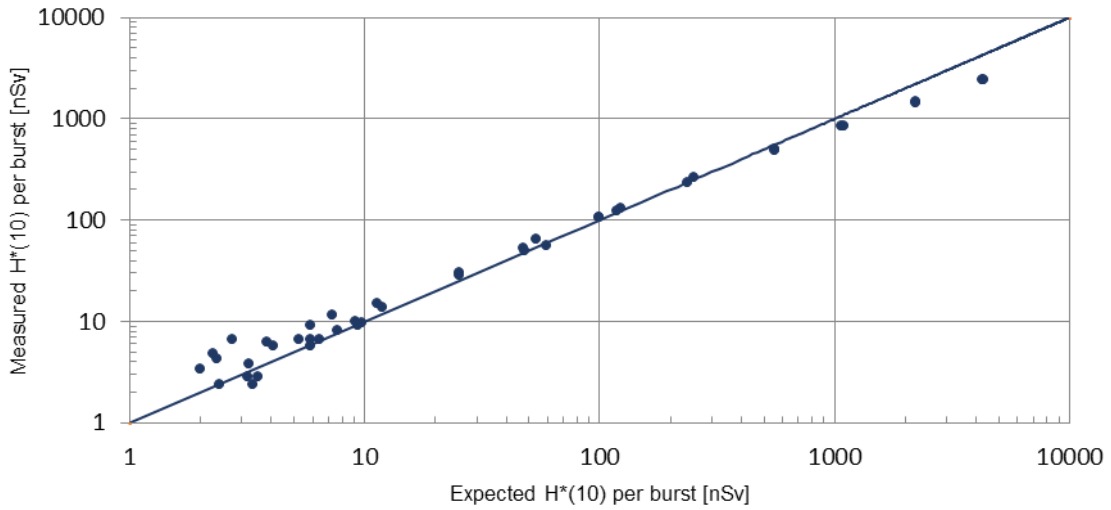
TECHNICAL SPECIFICATIONS

General characteristics

- Temperature range: 0° ÷ 50 °C
- Overall dimensions: ø = 250 mm, H = 425 mm
- Total weight: 18 kg
- Cylindrical BF_3 detector, 0.26 atm filling gas pressure
- Energy range: from 0.025 eV to 10 GeV
- H*(10) rate range: from 10 nSv/h to 100 mSv/h
- Neutron sensitivity: 0.6 cps/µSv/h
- Gamma sensitivity: < 0.5 µSv/h at 50 mSv/h, 662 keV
- Angular dependence: < 20%
- Max H*(10) per burst in pulsed fields with underestimation ≤ 10%: 2 µSv

Built-in Electronics

- Watchdog: good functioning circuit control
- Available communications: serial RS232 (default), serial for long distance RS485/422, Ethernet up to 1 km



LUPIN BF3-NP performance in neutron pulsed fields
(from: "A new version of the LUPIN detector", Rev. Sci. Instrum. 85, 065102, 2014)

OPTIONS

- Radiation sensitive electronics installed in a separate rack
- Ultra-fast response (Alarm signal in 50 ms) for dual use as neutron rem counter – beam loss monitor

ACCESSORIES AVAILABLE UPON REQUEST

1. Traceable calibration
2. Trolley kit: bare/unwired trolley for wheeled transport
3. Flight case
4. Warranty extension from 12 months to 24 months

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