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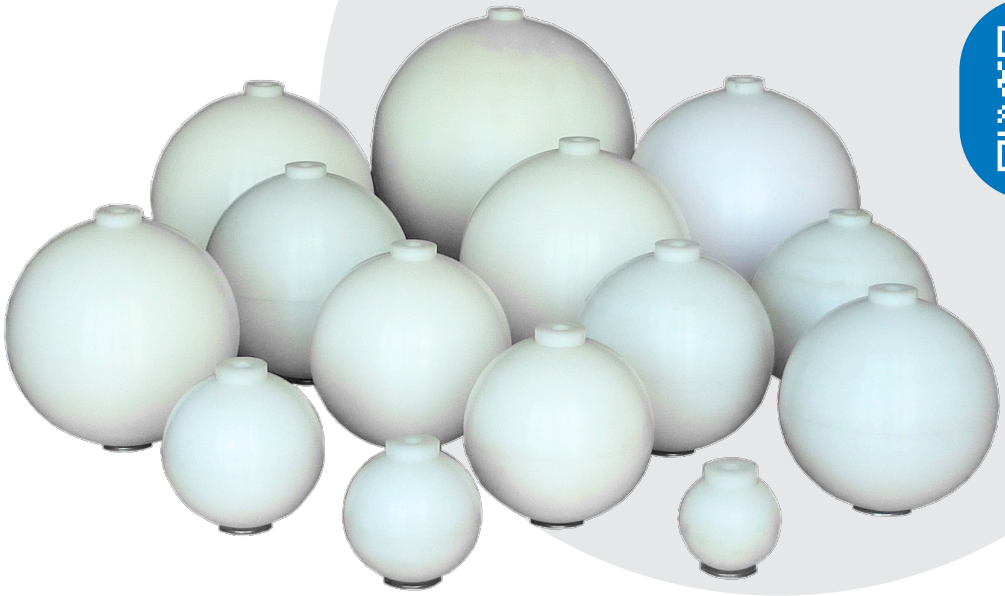
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BSS

BONNER SPHERE SPECTROMETER



Turnkey solution

Worldwide standard

Customizable moderator assembly and quantity

- He-3 proportional counter detector
- HDPE spherical moderators, from Ø 3″ to Ø 18″
- Accessory extension set for energy range up to 10 GeV
- Proprietary unfolding code available
- Optional special electronics for use in pulsed fields

The **Bonner sphere spectrometer** consists of an array of He-3 proportional counter thermal neutron detectors, each housed in a spherical HDPE moderator of different diameters.
BSS is proposed in two main configurations, adjustable according to the requirements, for single or multiple detectors.
An unfolding software (RUFUS), used to calculate the neutron spectrum, is also available for both configurations.
Each proportional counter is connected to a compact electronic module (2.5 cm diam. x 7.6 cm), providing:

- Precision wide-band charge-sensitive pre-amplifier and amplifier
- Discriminator circuit
- High voltage adjustment 0-2200 V
- Amplifier gain and discriminator threshold adjustment
- Analogue test points for shaped signals and HV

A user-friendly dedicated acquisition software can be installed on the PC managing the BSS, allowing the user to start and stop the measurements, to modify the parameters and to visualize the saved data.
The **BSS** standard set, designed to cover the neutron energy range from 1 meV to < 100 MeV, includes the following HDPE moderators: Ø 3”, Ø 3.5”, Ø 4”, Ø 4.5”, Ø 5”, Ø 6”, Ø 7”, Ø 8”, Ø 10”, Ø 12”, Ø 15”, Ø 18”.

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All specifications are subject to change without notice

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The **available configurations** of BSS are:

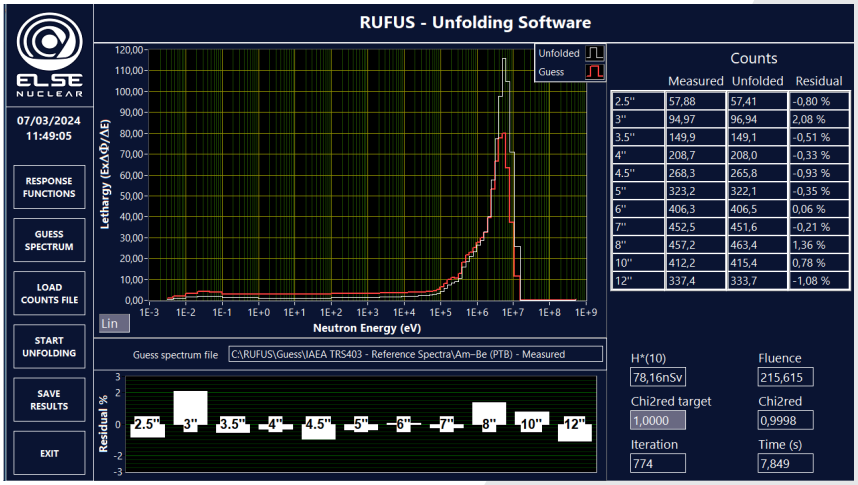
- Single detector: includes only one He-3 proportional counter, to be inserted in one moderator sphere at a time. The detector is managed by a Counter Module and the user interface is the “Single counter” software.
- Multiple detectors: includes up to 16 He-3 proportional counters, and up to 16 moderator spheres (12 standard + 4 accessory), to be employed at the same time. The detectors are managed by a Datalogger and the user interface is the “DLOG” software.



He-3 insert assembly

TECHNICAL SPECIFICATIONS

- He-3 spherical proportional counter detector
- Gas filling pressure: 2 atm or 8 atm for higher sensitivity
- Housing: HDPE cylindrical inserts
- Aluminium supports designed to easily align the centre of the detectors active volume at the same height



BSS unfolding software - RUFUS





BSS flight case

OPTIONS

- 8 atm gas filling pressure for higher sensitivity
- Special electronics (with no dead time) for use in pulsed fields

ACCESSORIES AVAILABLE UPON REQUEST

- Bonner sphere set for extension to 10 GeV
  - Ø 3” HDPE inner moderator, 1” lead shell, Ø 7” HDPE outer moderator
  - Ø 4” HDPE inner moderator, 0.5” lead shell, Ø 7” HDPE outer moderator
  - Ø 4” HDPE inner moderator, 1” lead shell, Ø 8” HDPE outer moderator
  - Ø 4” HDPE inner moderator, 0.5” copper shell, Ø 7” HDPE outer moderator
- Unfolding code for automatic spectra and H*(10) calculation
- Response functions obtained via Monte Carlo simulations
- Flight case
- Warranty extension from 12 months to 24 months

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