

Service de Physique Nucléaire

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Séminaire

le mercredi 18 février 2009 à 11h

CEA-Saclay SPhN, Orme des Merisiers Bât. 703 Salle 135

VERDI – a high-resolution fission-fragment time-of-flight spectrometer

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The investigation of neutron-induced fission characteristics like fragment mass- and energy-distributions is usually based on the double-energy technique using twin Frisch-grid ionisation chambers (IC). The main feature of an IC is its insensitivity to radiation damage, which makes it most suitable for measurements in a strong neutron environment. Providing the existence of prompt neutron emission data the pre-neutron fission fragment mass and energy distributions may be obtained in an iterative process. However, those input data do exist only for the main isotopes of uranium and plutonium at sufficient detail, and extrapolation methods have to be applied when analysing neighbouring compound nuclear systems.

With the construction of the double time-of-flight spectrometer VERDI we aim at the simultaneous measurement of pre- and post-neutron masses directly avoiding prompt neutron corrections. In order to arrive at a mass resolving power $A/\Delta A \geq 100$ ultra-fast time pick-up detectors based on artificial diamond material are under investigation. From the simultaneous measurement of pre- and post-neutron fission-fragment data prompt neutron multiplicity may be inferred as a function of fragment mass and total kinetic energy. In its final state VERDI is supposed to be coupled to detectors to measure delayed decay channels from fission fragments as for example beta-delayed neutron emission.

The presentation aims at presenting the VERDI spectrometer and at discussing potential experiment programmes.

Le café sera servi 10 minutes avant, en salle 125

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