



Séminaire le vendredi 27 novembre 2009 à 11h00

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

Level densities and gamma-ray strength functions in warm nuclei

Sunniva SIEM

Université d'Oslo

Level densities and gamma strength functions are fundamental properties of the atomic nucleus, and important input parameters in reaction cross section calculations, used in reactor physics and for models of formation of heavy elements in supernova explosions. The Oslo group has developed a unique technique to extract simultaneously the level density and radiative strength function and I will present our latest results from experiments in Oslo.

After finding the level density as a function of excitation energy, we can explore thermodynamic properties of the nucleus such as the entropy, the temperature and heat capacity.

The gamma-strength function is dominated by the Giant Electric Dipole Resonance (GEDR), but we have measured some smaller resonances on its low energy tail in experiment in Oslo.

I will show and discuss the scissors mode resonance seen in rare earth region, a possible neutron skin oscillations resonance seen in Sn and Dy nuclei and finally an unexpected increase in the gamma-strength function at low gamma energy observed in Fe, Mo, V, and Sc isotopes, and now also in Ti.

This enhancement is presently not understood and remains a challenge to explain theoretically. I will also discuss some future possibilities for measuring level densities and gamma-strength functions with radioactive beams.

Le café sera servi 10 minutes avant, en salle 125

Contact : vlapoux@cea.fr tél : 01 69 08 40 83

<http://irfu.cea.fr/Sphn/>