

Exit Report  
FUSTIPEN visit  
GANIL, February 3-8, 2012  
Witold Nazarewicz

*Department of Physics and Astronomy, University of Tennessee*

The objective of the visit, hosted by Marek Płoszajczak and Heloise Goutte was twofold. With Marek and his students Yannen Jaganathen and Kevin Fosseze we collaborated on two projects:

1. Description of nuclear reaction within the complex-energy Gamow Shell Model framework. The coupled channel code is in the final stage of tests, and the first applications will address the problem of radiative capture.
2. Applications of the Gamow Shell Model to weakly bound dipolar and quadrupolar molecules, which are atomic analogues of deformed nuclear haloes. Here, we moved to the benchmarking phase in which our predictions are compared with previous atomic calculations.

Marek and I also discussed the final details of the collaborative project on Asymptotic Normalization Coefficients, stemming from the previous FUSTIPEN visit, and the joint paper will be submitted very soon.

The visit was an excellent opportunity to discuss a possible TALENT teaching module in 2013 in GANIL. This idea will be further explored with GANIL management and the University of Caen.

My visit was also a good opportunity to participate in the FUSTIPEN topical meeting on "Theory of Nuclear Fission", January 4-6, 2012. The meeting was very well attended and afternoons were entirely devoted to very lively collaborative discussions on various topics, including the importance of scission point in determining fragment' properties; need for uncertainty quantification in theoretical modeling; and time dependent approaches to the nuclear large amplitude collective motion. During the meeting, I led a discussion on statistical and systematic errors of nuclear models and gave a presentation on the self-consistent theory of nuclear fission. Some of these topics will be further discussed during the collaboration meeting in Saclay in April, hosted by Thomas Duguet. All in all, I found the meeting and satellite discussions very useful for my future fission research and I am sure that some collaborative work along the ATDHFB lines (involving Tennessee, Livermore, and French GOA-Gogny effort) will be carried out as a result.