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RE: Exit Report: FUSTIPEN visit to GANIL by Dr. Bruce R. Barrett, March 14-22, 2015

Dr. Robert Janssens
Co-Director: FUSTIPEN
Argonne National Laboratory

Dear Robert,

This is my exit report on my FUSTIPEN visit to GANIL from March 14-22, 2015. The purpose of my FUSTIPEN visit to GANIL was 1.) to continue my collaborative research with Marek Ploszajczak on the development and applications of the No-Core Gamow Shell Model (NCGSM) to light nuclei and 2.) to participate in and co-host with Marek the FUSTIPEN Topical Meeting on *New Directions for Nuclear Structure and Reaction Theories* from March 16 to March 20, 2015.

Besides Marek, two other NCGSM collaborators were also at GANIL the week of March 15-20, 2015: Nicolas Michel (GANIL) and George Papadimitriou (Iowa State University). We had a number of discussions during this week and made plans for future investigations and possible publications, such as the resonant and unbound structure of ^5He and ^5Li and of the isotopic chains for H and He.

The FUSTIPEN Topical Meeting on *New Directions for Nuclear Structure and Reaction Theories* was attended by 38 nuclear physicists, both theorists (the majority) and experimentalists. There was a maximum of only six talks per day, related to a daily topic, such as QCD based NN and NNN interactions or new developments in and/or refinements of quantum mechanical theories for many-fermion systems. Consequently, there was adequate time available for asking questions during and after talks as well as for extended discussions of the day's presentations during group sessions after the daily talks. The experimental talks were particularly beneficial in highlighting recent investigations and discoveries, especially for light nuclei, such as the new studies of the F and N isotopes, as discussed by Olivier Sorlin (GANIL). Other highlights included a discussion between Bira van Kolck (IPN Orsay/University of Arizona) and Evgeny Epelbaum (Ruhr University Bochum), regarding NN and NNN interactions determined from Chiral Perturbation Theory within Effective Field Theory, and several talks on mean-field-theory approaches beyond the Skyrme interaction and on density functional theory for nuclear reactions. Marek and I strongly feel that our FUSTIPEN Topical Meeting was highly productive and successful and are considering continuing this series of March FUSTIPEN Topical Meetings on Microscopic Nuclear Structure and Reaction Theories in 2016.

My FUSTIPEN visit to GANIL March 14-22, 2015, met our goals of 1.) bringing together the NCGSM collaborators to discuss the status of the NCGSM and its future applications and 2.) producing a scientifically stimulating and informative FUSTIPEN Topical Meeting on the *New Directions for Nuclear Structure and Reaction Theories*.

With best regards,

Bruce

Bruce R. Barrett