Department of Physics

315 Keen Building

Florida State University, Tallahassee, FL 32306-4350

Email: jpiekarewicz@fsu.edu

(850) 644-6344/2868
FAX: (850) 644-8630

Dr. Robert Janssens
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, IL 60439

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Dear Robert,

This is an exit report detailing my activities related to the FUSTIPEN proposal prepared in collaboration with Francesca Gulminelli (LPC, Caen). As you probably remember, my one-week (May 25-29, 2014) visit to GANIL was part of a larger one-month effort (May 3-31, 2014) dedicated to establish collaborations with our French colleagues at IPN-Orsay, IPN-Lyon, GANIL, and LPC.

I arrived in Paris on May 4 and spent the first two weeks at IPN-Orsay where I established a collaboration with Elias Khan and Denis Lacroix on the use of Giant Resonances of neutron-rich nuclei as possible constraints on both the single-particle structure of exotic nuclei and the Equation of State (EOS) of neutron-rich matter. As part of my visit to IPNO, I gave a seminar (on May 7) and a lecture (on May 13) on the role of nuclear physics in constraining the structure and dynamics of neutron stars.

During my third week in France (May 19-21) I visited IPN-Lyon to attend the *Workshop on the Physics of Pulsars and their Environment* where I was invited to give a plenary talk on "Modeling neutron stars: recent progress and future challenges". As it is often the case in meetings with diverse communities, it is difficult to establish long-lasting collaborations and this meeting was no exception. However, at the end of the workshop a collaborative effort was established with Natalie Webb, an X-ray observer from IRAP Toulouse, that will help strengthen her proposal on measuring the radius of PSR J1614-2230—a neutron star with an already accurately measured mass of 2 solar masses.

The fourth and last week of my visit to France was devoted entirely to FUSTIPEN. My visit started with a two-day Topical Meeting on the "Structure of the neutron star crust: experimental and observational signatures" that I co-organized with Francesca Gulminelli. As in the case of the workshop at IPN-Lyon, this topical meeting involved a community with diverse interests, namely, observational, experimental, and theoretical. However, unlike the workshop at IPN-Lyon, the meeting was relatively small: with only 10 speakers (including the two organizers) and a total of 22 participants. The main tenet of the meeting was to highlight critical open questions in stellar-crust physics and on the joint role that the astrophysics and the nuclear physics communities could play in tackling these challenges. Speakers were given 45 minutes to introduce the audience to some of the most recent accomplishments in the field and to develop common strategies to

move the field forward in a manner that will foster dialogue and promote collaborations between the two communities. Each presentation ended with about 15 minutes devoted to discussion. Despite our best efforts, we found very challenging—as many others have found before us—to establish meaningful collaborations between the astrophysics and the nuclear physics communities. However, we agreed to keep the channels of communications open, and plans were made to create a *wiki page* to list some of the critical open questions and hopefully some solutions. Perhaps the greatest accomplishment of the topical meeting was the involvement and excitement displayed by the local experimental community. In particular, the GANIL/Spiral2 community feels confident in being able to measure masses of neutron-rich nuclei that may provide stringent constraints on the composition of the outer crust. All in all, I believe that the workshop was a success and that through a concerted effort we will be able to move the field forward. At the end of my stay at FUSTIPEN I had very productive discussions with Francesca Gulminelli, Jérôme Margueron (IPN-Lyon), and Francois Aymard (graduate student, LPC) on possible constrains on the EOS through the measurement of the the central density of neutron-rich nuclei. Preliminary calculations seem to suggest that this may be a promising tool to constrain the density dependence of the symmetry energy.

In summary, I regard my visit to France in general and to FUSTIPEN in particular as a highly successful one. I am delighted to have left France with a potentially large set of talented new collaborators that include Elias Khan, Denis Lacroix, Natalie Webb, Francesca Gulminelli, Jérôme Margueron, and Francois Aymard. Finally, my deepest gratitude to the FUSTIPEN board for supporting my proposal—and a special "Merci" to Marek Ploszajczak and Mme Lecerf-Rossard for taking such good care of me during my visit to Caen.

Best regards,

Jorge Piekarewicz