

**Beyond mean-field description of low-energy nuclear spectroscopy:
Present and future**

Paul-Henri Heenen

Free University of Brussels

I will briefly summarize the principles of the method that we developed over the past 10 years. It is based on the introduction of correlations on top of a Skyrme mean-field method. I will show a sample of recent applications demonstrating the power of the method: Determination of correlated densities, octupole correlations, super-heavy nuclei, shape coexistence in neutron deficient Hg isotopes. This will enable me to raise questions about the way information on nuclear deformation is extracted from experimental data. I will present new developments performed recently and I will show how they enlarge the predictability of the model.