Contribution ID: **314** Type: **Oral Presentation**

Improved modelling of fission dynamics with the Time-Dependent Generator Coordinate Method

As experimental measurements and industrial applications of nuclear fission continue to develop, there is an increasing demand for theoretical models to simulate fission processes with high precision, including both reactions commonly used in applications today and exotic processes involving superheavy nuclei which have not yet been observed. The construction of such a model remains a formidable challenge due to computational limitations as well as the complexity of the underlying subatomic interactions.

This presentation will introduce an approach to describing fission based on the Time-Dependent Generator Coordinate Method (TDGCM). While models in this category have improved considerably over the past few decades, significant corrections and extensions are required to achieve the predictive power needed by modern laboratories and industrial applications. A particular focus will be the removal of the Gaussian Overlap Approximation (GOA) from the method, and the modifications to the theory that this requires, with the aim of better simulating the dynamics of extremely deformed compound nuclei approaching scission (splitting into fragments). The new model is compatible with further improvements which allow for the restoration of broken symmetries, with the potential to include previously neglected degrees of freedom such as internal excitations.

Author: LAU, Ngee Wein (L2I Toulouse, CNRS/IN2P3, Université de Toulouse)

Co-authors: SIMENEL, Cedric (Australian National University); SCAMPS, Guillaume (L2I Toulouse, CNRS/IN2P3, Université de Toulouse); BERNARD, Rémi (CEA Cadarache)

Presenter: LAU, Ngee Wein (L2I Toulouse, CNRS/IN2P3, Université de Toulouse)

Session Classification: Parallel session

Track Classification: Nuclear Structure, Spectroscopy and Dynamics