ID de Contribution: **159** Type: **Ordinary**

Review of Nuclear Matrix Elements for Neutrinoless Double-Beta Decay

mardi 15 mars 2016 08:30 (20 minutes)

Computing reliable matrix elements for processes such as neutrinoless $\beta\beta$ decay that have never before been observed is a challenging task. So far, all calculations involve approximations and phenomenology that introduce unquantifiable uncertainty. Fortunately, ab initio nuclear-structure theory, based on innovative many-body techniques plus nuclear interactions and currents that come from first principles, has made rapid progress in recent years. I describe several ab initio schemes, all in development, for computing the matrix elements and estimating uncertainty. These approaches promise dramatic improvement in the accuracy with which we can compute the the matrix elements for neutrinoless $\beta\beta$ decay, particularly when combined with more phenomenological work that is also underway.

Structure theorists around the world are organizing to attack the matrix-element problem. In the US, the effort has led to a Department-of-Energy sponsored collaboration, which I will briefly describe.

Auteur principal: ENGEL, Jonathan (University of North Carolina)

Orateur: ENGEL, Jonathan (University of North Carolina)

Classification de Session: Neutrinos

Classification de thématique: Theory