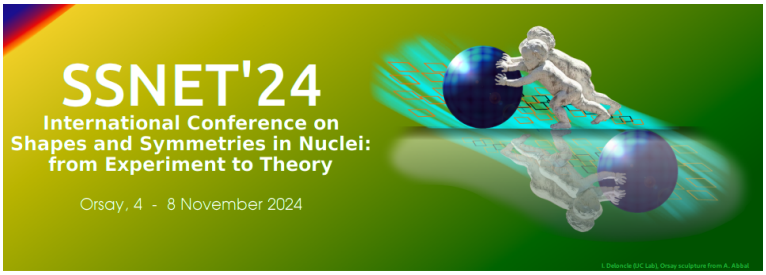

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Emergence of high-order deformation in atomic nuclei

mercredi 6 novembre 2024 17:00 (20 minutes)

The development of worldwide rare isotope beam facilities has brought many new insights in nuclear physics. In particular, nuclei with exotic deformation have acquired great interest over the years for the challenges and implications it involves. Theoretically, relativistic density functional theory has achieved great success in describing many nuclear phenomena over the past several decades.

In a series of our recent works [1,2,3,4], we have developed the three-dimensional cranking relativistic density functional theory to study the high-order deformation in atomic nuclei. In particular, by overcoming the variational collapse and the fermion doubling problem, relativistic density functional theory has been solved in three-dimensional lattice space, and the corresponding time-dependent relativistic density functional theory has been established. It allows a unified description of the static and dynamic properties of nuclei without assuming any spatial symmetry restrictions. In this talk, I will review recent progress in the development of time-dependent relativistic density functional theory in space lattice and its application for the emergence of high-order deformation in nuclei.

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