ID de Contribution: **117** Type: **Non spécifié**

# Study of nuclear low-lying spectrum and shape phase transition within microscopic triaxial-and-pairing collective Hamiltonian (remote)

*mercredi 1 février 2023 12:30 (20 minutes)*

The triaxial deformation and coupling with pairing vibration play important roles on the nuclear low-lying spectra and shape transitions. Here we have constructed a triaxial-and-pairing collective Hamiltonian that describes the triaxial shape vibrations, rotations, and coupling with pairing vibration, based on the covariant density functional theory (CDFT). The dynamics of the collective Hamiltonian is fully determined by the constrained CDFT calculations in the space of intrinsic shape and pairing deformations. The effect of coupling between shape and pairing degrees of freedom is analyzed in a study of low-energy spectra and transition rates of $^{156}$Gd, by comparing with the calculations from quadrupole collective Hamiltonian. Finally, the shape phase transitions and triaxial deformations in Xe isotopes have been studied in detail.

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**Classification de Session:** Session 10: Shapes and shape coexistence