

Individual dipole toroidal states in ^{58}Ni

Wednesday, 26 October 2022 14:15 (15 minutes)

In early (e, e') experiments of TU-Darmstadt group, some dipole states at 8-11 MeV in ^{58}Ni demonstrate enhanced transverse form factors. In this connection, we explored a possible toroidal nature of these states using the fully self-consistent Quasiparticle Random-Phase Approximation approach with Skyrme forces SVbas, SkM* and SLy6. The main attention was paid to well assigned 8.24 MeV 1- state. Various characteristics of the dipole states were analyzed. The calculations show that several 1- states at 8-11 MeV can indeed be toroidal. The available (e, e') data for 8.24-MeV 1- state are well described within the Plane Wave Born Approximation. A tentative prescription to distinguish toroidal states from irrotational ones is proposed. To our knowledge, 8.24-MeV 1- state in ^{58}Ni is the first individual toroidal state proposed for spherical nuclei.

Primary author: VISHNEVSKIY, Petr

Presenter: VISHNEVSKIY, Petr

Session Classification: Theoretical Physics

Track Classification: Theoretical Physics