Microscopic Study of Wobbling Motion Based on Relativistic Density Functional Theory

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Investigating wobbling motion provides crucial insights into the fundamental structure and excitation modes of nuclei [1–3], making it a frontier topic in both experimental and theoretical nuclear structure research. There are two necessary conditions for establishing the wobbling mode, i.e., significant triaxial deformation and high-j particle(s) or hole(s) configuration. To search for the wobbling candidates in the realistic nuclei, a reliable theoretical approach is needed to get the information of the configuration and deformation for a specific nucleus. In this talk, the combination of quantal particle rotor model and the state-of-art relativistic density functional theory (abbreviate as RDFT+PRM) will be used to describe the wobbling candidates. First of all, the impacts of quadrupole deformation parameter [4], triaxial deformation parameter [4], and valence nucleon Fermi surface [5] on the wobbling modes will be analyzed. Subsequently, we will present recent work on the possible wobbling candidates in the odd-neutron isotones [6] and in the 160 mass region [7].

References

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