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How do triaxial nuclei rotate chirally? (remote)

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Chirality is a well-known phenomenon in many fields, such as chemistry, biology, molecular physics, and particle physics. The study of nuclear chirality has attracted a lot of attention since it was originally suggested for triaxial nuclei in 1997 [1]. The experimental evidence of nuclear chirality is the so-called chiral doublet bands, which have been observed in many nuclei. Theoretically, there have been many approaches employed to study the chiral nuclei including the phenomenological approaches and the microscopic ones [2].
In a series of our recent works [3,4,5,6], we have developed the three-dimensional cranking relativistic density functional theory to study the chirality in triaxial 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 chiral structure and dynamics in triaxial nuclei.

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