

Probing the Electroweak Properties of Nuclei with Radioactive Atoms and Molecules

Thursday, July 25, 2024 3:25 PM (25 minutes)

Atoms and molecules containing nuclei with extreme proton-to-neutron ratios can be artificially created to enhance sensitivity to particular nuclear phenomena. Precision laser spectroscopy measurements of atomic species provide access to the ground-state electromagnetic properties of nuclei, which play a critical role in our understanding of nuclear structure.

On the other hand, the electronic structure of certain molecules can be used to isolate the effects of the nuclear electroweak structure, enabling the possibility of measuring yet-to-be-discovered parity and time-reversal violating nuclear properties. In this talk, I will present recent highlights and perspectives from laser spectroscopy experiments on these radioactive species. I will also discuss the relevance of these experiments in addressing open problems in nuclear and particle physics.

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Session Classification: Fundamental Symmetries & Precision Measurements