



Unveiling new physics through precision beta-decay experiments and theory

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There is compelling evidence that the Standard Model (SM) of particle physics is not a complete theory. Recent experiments have revealed interesting deviations from the SM, emphasizing the importance of the nuclear precision frontier in the quest for physics beyond the Standard Model. This frontier focuses on the precise measurement of nuclear phenomena, particularly β -decays, which necessitate precise theoretical predictions.

This presentation will focus on the search for exotic weak interactions via β -decays. It will examine the challenges of nuclear calculations and introduce a comprehensive framework for assessing β -decay precision experiments. This framework enables highly accurate and controlled calculations of β -decay observables that are relevant to ongoing experiments. Recent discoveries on tensor exotic weak interactions based on measurements of β -decays in ^6He and ^{23}Ne , using this formalism and ab initio nuclear calculations, will be discussed. Furthermore, I will showcase how this framework enables new types of measurements, such as forbidden β -decays, and provide insights into upcoming experiments and calculations.

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4:00 pm

Lindley Hall room 321