



Contribution ID: 27

Type: **Invited Talk**

Constraining Nuclear Currents for Electroweak Processes

Monday, 31 July 2023 16:45 (25 minutes)

Nuclear interactions based on chiral effective field theory (χ EFT) have achieved significant success in describing low-energy nuclear properties. This success can be attributed, in part, to the fitting procedure employed to determine the low energy constants (LECs), which serve as the free parameters of χ EFT nuclear interactions. However, the description of nuclear electromagnetic and electroweak observables at low and medium energies has not always been satisfactory. In this seminar, we will discuss a new approach used to constrain the LECs present in nuclear electromagnetic currents. Through specific examples, we will demonstrate the impact that this new procedure can have on the description of electromagnetic and weak processes for few-body systems at low and medium energies.

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Session Classification: Monday Parallel Session: NN and Currents (Atrium Maximum)