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Light-nuclei electroweak interactions in pionless effective field theory HILLA DELEON, ECT*, TIFPA, DORON GAZIT COLLABORATION[1], LUCAS PLATTER COLLABORATION — Low-energy electroweak interactions in light nuclear systems (deuteron, ^{3}H, ^{3}He) take part in many scenarios, such as magnetic moments, β-decay, Big Bang nucleosynthesis and the evolution of the Sun, which is a result of a fusion of two protons into deuteron (named *pp* fusion) that determines the Sun's lifetime ($\sim 10^9$ years). Here, we use a general perturbative diagrammatic approach for calculating electroweak interactions between $A = 2, 3$ nuclei. Using the four well-measured electromagnetic reactions, we introduce a novel uncertainty assessment to estimate truncation effects, which enables us to estimate the theoretical uncertainty of the theory. This theoretical uncertainty, accompanied by the strong analogy between the electromagnetic and weak observables, led to the high accuracy calculation of the *pp* fusion rate. This prediction for the *pp* fusion rate is up to 5% bigger than previous estimates, which might affect current models of solar evolution.

[1]Phd adviser

Hilla Deleon
Huji, ECT*, TIFPA

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