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Predictive Calculations Of Nuclear Reactions With Tthe No-Core Shell Model With Continuum[1] KONSTANTINOS KRAVVARIS, SOFIA QUAGLIONI, Lawrence Livermore Natl Lab, PETR NAVRATIL, TRIUMF — The accurate modeling of nuclear reaction cross sections relevant in stellar processes is one of the main goals of reaction theory. In the light-element region, first-principles calculations where all nucleons are treated as active are possible, allowing for predictive calculations to be made. However, calculations performed with modern nuclear interactions derived from chiral effective field theory have inherent uncertainties; namely the truncation of the chiral expansion, as well as possible uncertainties arising from fitting low-energy constants to experiment. It is therefore essential to be able to quantify such uncertainties in order for a theoretical prediction of reaction cross sections to be made. We will outline the basics of the no-core shell model with continuum and present preliminary results for astrophysical reactions and efforts to quantify their uncertainties.

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