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Abstract for an Invited Paper  
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### ***Ab Initio* Unified Approach to Nuclear Structure and Reactions<sup>1</sup>**

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In recent years, a significant progress has been made in developing *ab initio* many-body approaches capable of describing bound and scattering states in light nuclei employing Hamiltonians constructed within chiral effective field theory. One of these approaches is the No-Core Shell Model with continuum (NCSMC) [1]. I will introduce the NCSMC and present calculations of resonances of exotic nuclei  ${}^6,7\text{He}$  [1,2] and  ${}^{11}\text{N}$ , of five- and six-nucleon scattering [3,4], and of the role of chiral three-nucleon interactions in the structure of  ${}^9\text{Be}$  [4] and  ${}^{11}\text{Be}$ . Further, I will discuss applications to reactions important for astrophysics, such as  ${}^3\text{He}(\alpha,\gamma){}^7\text{Be}$  and  ${}^3\text{H}(\alpha,\gamma){}^7\text{Li}$  radiative capture. Finally, I will highlight our ongoing efforts to describe transfer reactions including the  ${}^3\text{H}(d,n){}^4\text{He}$  fusion.

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