Ab initio calculations of nuclear structure and reactions with chiral two- and three-nucleon interactions[1] PETR NAVRATIL, TRIUMF, JOACHIM LANGHAMMER, TU Darmstadt, GUILLAUME HUPIN, SOFIA QUAGLIONI, LLNL Livermore, ANGELO CALCI, ROBERT ROTH, TU Darmstadt, VITTORIO SOMA, CEA-Sacley, ANDREA CIPOLLONE, CARLO BARBIERI, University of Surrey, T. DUGUET, CEA-Sacley — The description of nuclei starting from the constituent nucleons and the realistic interactions among them has been a long-standing goal in nuclear physics. In recent years, a significant progress has been made in developing *ab initio* many-body approaches capable of describing both bound and scattering states in light and medium mass nuclei based on input from QCD employing Hamiltonians constructed within chiral effective field theory. We will present calculations of proton-^{10}C scattering and resonances of the exotic nuclei ^{11}N and ^{9}He within the no-core shell model with continuum [1]. Also, we will discuss calculations of binding and separation energies of neutron rich isotopes of Ar, K, Ca, Sc and Ti within the self-consistent Gorkov-Green's function approach [2].

[1] S. Baroni, P. Navratil, and S. Quaglioni, Phys. Rev. Lett. **110**, 022505 (2013); Phys. Rev. C **87**, 034326 (2013).
[2] V. Soma, A. Cipollone, C. Barbieri, P. Navratil, and T. Duguet, Phys. Rev. C **89**, 061301(R) (2014).

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