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Applications of local chiral N^2LO three-nucleon interaction to nuclear structure and reactions¹ PETR NAVRATIL, SOFIA QUAGLIONI, LLNL — We overview recent results obtained with the three-nucleon (NNN) interaction derived within the chiral effective field theory at the N^2LO order regulated with a magnitude of the momentum transfer [1]. The regulated NNN interaction is then local in the coordinate space, which is an advantage for some many-body techniques. This interaction in combination with a chiral N^3LO nucleon-nucleon potential [2] proved to be successful in describing $A=3$ and 4 binding energies, radii [3,4] and scattering lengths [4], the structure of mid- p -shell nuclei [3], photo-disintegration of 4He [5], and $n-^3H$ and $A=3$ scattering [6,7]. [1] P. Navratil, *Few Body Syst.* 41, 117 (2007). [2] D. R. Entem and R. Machleidt, *Phys. Rev. C* 68, 041001(R) (2003). [3] P. Navratil, V. G. Gueorguiev, J. P. Vary, W. E. Ormand, A. Nogga, *Phys. Rev. Lett.* 99, 042501 (2007). [4] A. Kievsky *et al.*, *J. Phys. G* 35, 063101 (2008). [5] S. Quaglioni and P. Navratil, *Phys Lett B* 652, 370 (2007). [6] M. Viviani *et al.*, arXiv:0812.3547 [nucl-th]. [7] L. E. Marcucci *et al.*, arXiv:0905.3306 [nucl-th].

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