Abstract Submitted
for the DNP11 Meeting of
The American Physical Society

Ab initio DFT for nuclear physics LUCAS PLATTER, Chalmers University of Technology — The description of heavy nuclei using a microscopic Hamiltonian that describes the nucleon-nucleon interaction is one of the ultimate challenges in nuclear theory. I will discuss recent progress towards this goal made with ab intio density functional theory (ADFT). ADFT aims at obtaining a density functional from many-body perturbation theory and using modern methods borrowed form chemical physics to solve for ground state observables of large nuclei. In particular, I will highlight the density matrix expansion [1] and the optimized effective potential [2] method as tools to deal with non-local functionals that appear naturally within such an approach.

[1] S. Bogner, R. J. Furnstahl and L. Platter, Eur.Phys.J. A39 (2009) 219.
[2] J. Drut and L. Platter, Phys. Rev. C in press.

Lucas Platter
Chalmers University of Te

Date submitted: 30 Jun 2011 Electronic form version 1.4