Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Density Functional Theory Approach to Shell Model Hamiltonians[1] MIHAI HOROI, Department of Physics, Central Michigan University, Mount Pleasant, MI 48859 — Density Functional Theory (DFT) is a well established method of obtaining ground state (g.s.) energies and one-body densities for systems of interacting fermions, such as electron and nucleons. DFT is mostly used in nuclear physics via short-range, Skyrme-type, interactions in coordinate space. We investigate a different density functional approach in finite model spaces, specific to shell model calculations. We attempt to extract the density functional form and the associated parameters in a fixed model space, by comparing the DFT results with the exact shell model calculations for small number of particles/holes. We than use the density functional to calculate cases with more particles that are more challenging for the shell model. Examples in the sd and fp model spaces will be presented.

[1]Support from the NSF grant PHY-0555366 is acknowledged.

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Date submitted: 23 Jun 2006 Electronic form version 1.4