**Modern Energy Density Functional for Nuclei**[1] SHALOM
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DAVID CARSON FULS, Cyclotron Institute, Texas A&M University, College Station, TX 77843 — The development of a modern and more realistic nuclear energy
density functional (EDF) for accurate predictions of properties of atomic nuclei is
a current subject of enhanced activity. Adopting the standard parametrization of
the Skyrme type interactions, we have recently determined within the Hartree-Fock
(HF) approximation a new and more realistic EDF by carrying out, using the simulating annealing method (SAM), a fit to an extensive set of experimental data on
binding energies, radii, single particle energies and giant resonance energies of nuclei.
We also imposed additional constraints, such as the Landau stability constraints on
nuclear matter (NM) and the non- negativity of the slope of the symmetry energy
density at high density of NM. We have also addressed the issues of the isospin dependence of the spin-orbit (SO) interaction, of the effects of long-range correlations
on properties of nuclei and of the equation of state of symmetric and asymmetric
NM.

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