

## Neutron Matter and Binding Energies with a New Gogny Force

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The Gogny force was first introduced in 1980 [1]. The first parametrization D1 gave satisfying results for masses, radii and pairing properties of many nuclei. Unfortunately, the surface energy was too high and D1 was not able to reproduce fission barriers.

To correct for this deficiency, a new parametrization: D1S was proposed [2]. In spite of the numerous advantages of this new interaction compared to D1, we have observed that D1S was still unable to reproduce the Neutron Matter (NM) Equation Of State (EOS).

The NM EOS was predicted by different authors [3,4,5]. Their results, obtained by variational calculations, are very similar. We have chosen the EOS proposed by Friedman-Pandharipande (FP) as our benchmark.

The aim of the present study is to build a new Gogny force which fits the EOS of FP. We have called this new parametrization: D1N. Its properties in nuclei (binding energies, pairing effects, moments of inertia ....) are presented.

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