Exotic nuclear forces studied within the mean field theory.

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Since the early days of Nuclear Physics, the concept of mean field has been very succesful, especially with respect to explaining observations related to structural effects.

Very often phenomenological terms have been introduced to account for experimental facts, the inclusion of a strong spin-orbit term in the shell model applications being probably one of the most spectacular ones. In the same time, often no solid justification for singling-out the discussion and use one term as e.g. spin-orbit whereas ignoring some others as e.g. tensor-term has been given, starting from the fundamental nucleon-nucleon interaction itself, and this for various reasons.

We would like to address the question of such interactions like the spin-orbit or the tensor force in the framework of the mean field calculations, using as a starting point the Hartree(-Fock) like equations, in contrast to the fully self consistent approaches using more phenomenological terms.