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Strongly tensor correlated Hartree-Fock theory on finite nuclei and nuclear matter

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We have developed a new framework for the treatment of tensor
interaction in the Hartree-Fock (HF) theory for nuclear many body system.
The tensor interaction plays an important role for the formation of nuclei.
However, we cannot include the tensor interaction in the HF space.
We extend the HF space by including two particle- two hole states (2p-2h)
for the tensor interaction to provide finite and essential contributions.
We name this framework as strongly tensor correlated Hartree-Fock (STCHF)
theory and apply it to nuclear matter and finite nuclei. We get good
results for nuclear matter when treated in the relativistic framework.

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