

Names: _____

PHYS 7501, FS 2021

Group Activity 11

Due: In class, September 28th

1. If there were not a tensor component to the NN interaction, what would that imply for deuterium? What problems might this effect cause? [Think big picture. Cosmic even.]
2. Treating the deuteron potential as a 3D square well, what's the minimum depth required to have a bound state, considering the empirical radius $R \sim 2\text{fm}$?
3. We were pretty pleased with our result that the pion range is $\sim 1.4\text{fm}$, but we overlooked the fact that $\sim 1\text{fm}$ is the size of the nucleon *diameter*. What does this mean we need to include in the meson exchange description of the NN interaction if we want to understand nuclei?