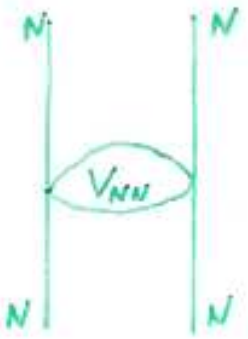
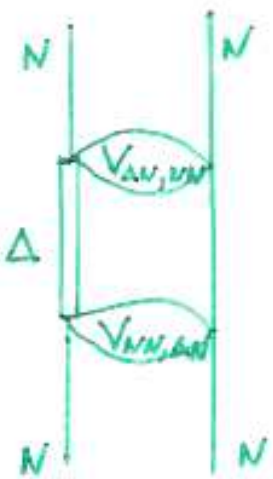
For a better understanding of the effective interaction let us have a look at the two-body system.

Question: Is it sufficient to consider the NN interaction in the following way?



Answer: No!

Nucleon has excitation spectrum: lowest resonance $\Delta(1232)$ with spin und isospin equal to 3/2. The following process with a virtual Δ is possible