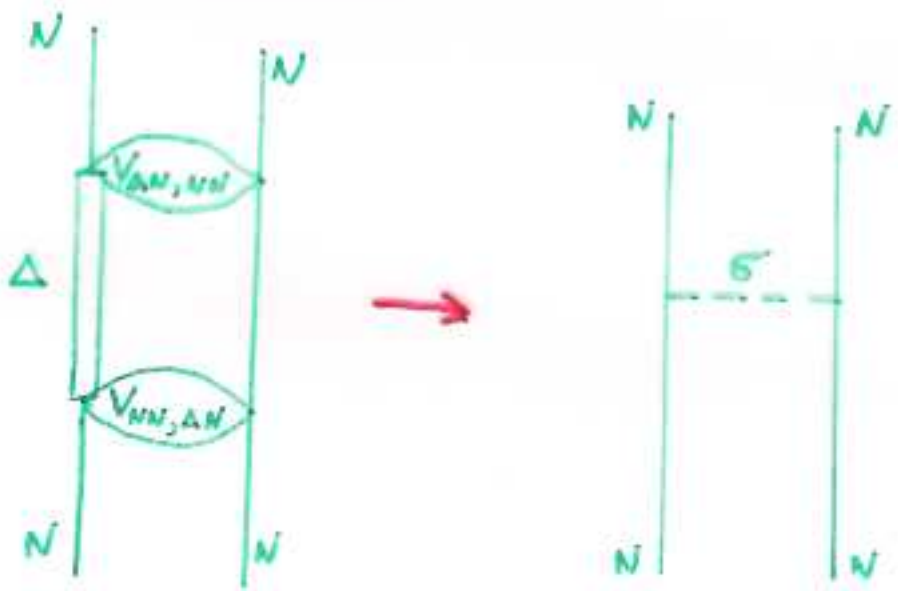
Conclusion:

In NN scattering one does not determine the bare NN interaction PVP, but an effective interaction $P\tilde{V}P$! For example in meson theoretical NN potential models Δ are partially simulated by the exchange of a hypothetical scalar σ meson with mass of about 500 MeV:



Because of term $(M_\Delta - M_N)$ in $H_{\not\pi\Delta}$ the energy denominator $(E - H_{\not\pi\Delta})^{-1}$ is negative, thus one gets attraction (note $V_{NN,N\Delta}$ and $V_{N\Delta,NN}$ are real in meson theoretical models, therefore $V_{NN,N\Delta} = V_{N\Delta,NN}$)