NN potentials "V low k"

- start from momentum space representation of a realistic NN potential
- introduce P-space P_Λ : $0 \le k \le \Lambda$
- make unitary transformation (see later) leading to effective potential V_Λ with $V(k > \Lambda) = 0$

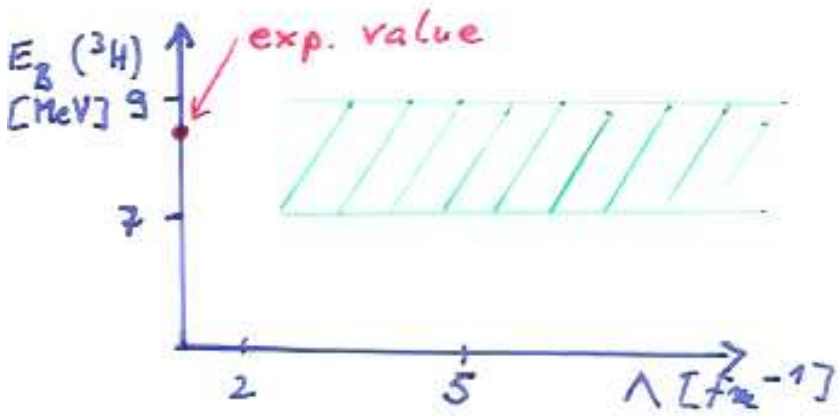
note : two-body kinetic energy $E_{NN}^{rel} = \frac{k^2}{M}$

$$\Rightarrow k = \sqrt{E_{NN}^{rel} M}$$

choose $\Lambda \ge \sqrt{M m_\pi} \approx \sqrt{5\,fm^{-1} \cdot 0.7\,fm^{-1}} = 2\,fm^{-1}$

Potential still reproduces NN phase shifts up to pion threshold !

$V_{low\,k}$ (V_{NN}) very similar for different V_{NN}



(Bogner, Kuo)

(Bogner, Nogga, Schwenk)