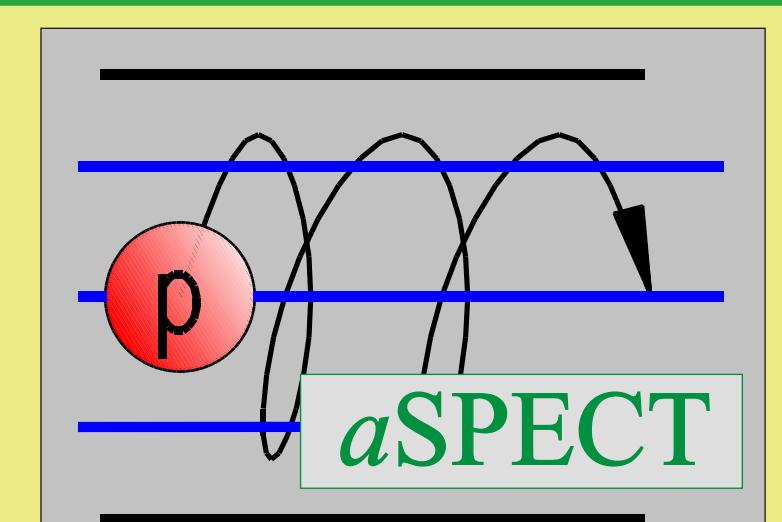
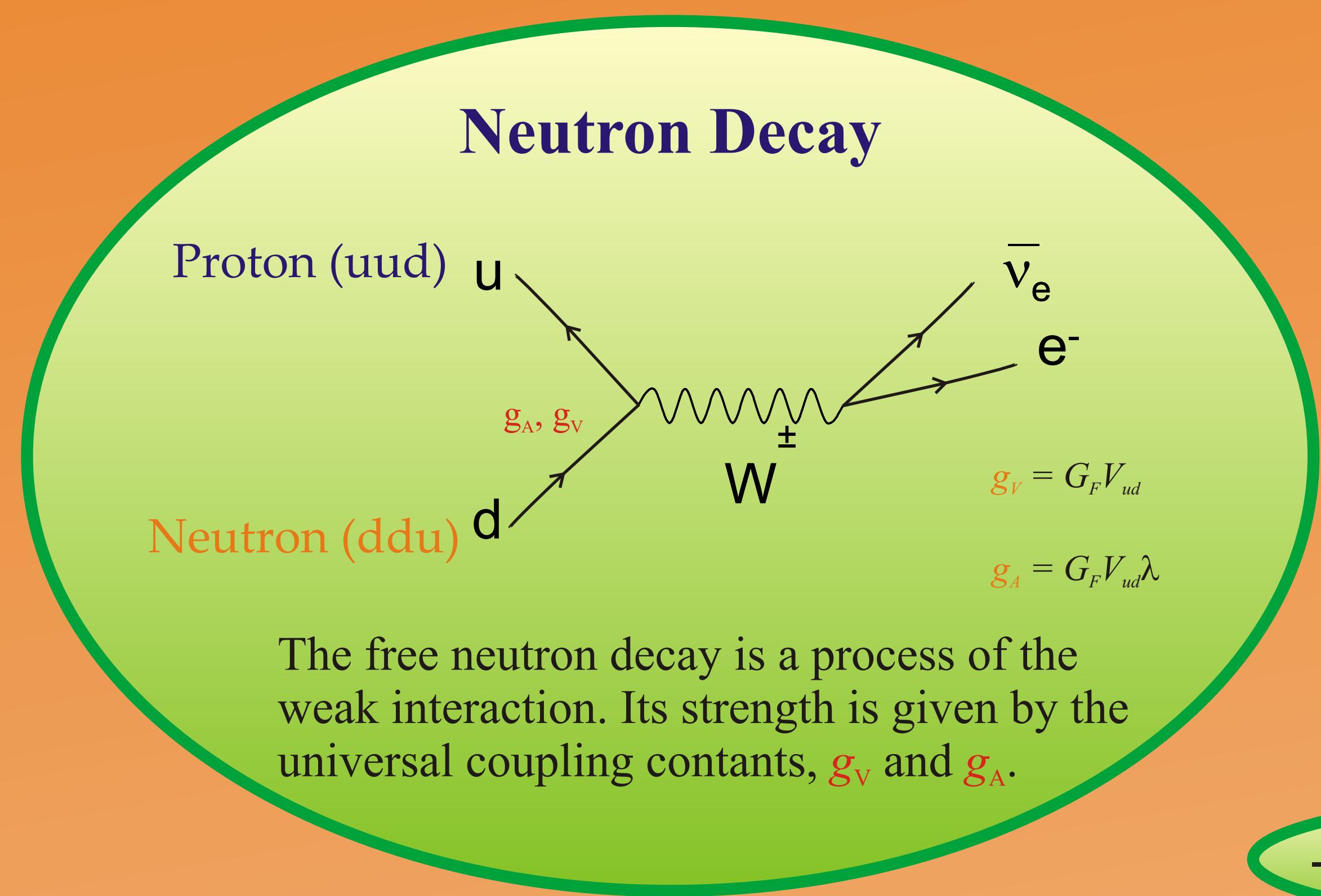


First Results with *a*SPECT



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Decay rate:

$$dW \propto \left(1 + a \frac{\vec{p}_e \cdot \vec{p}_{\bar{\nu}}}{E_e E_{\bar{\nu}}} \right)$$

a : angular correlation between electron and antineutrino

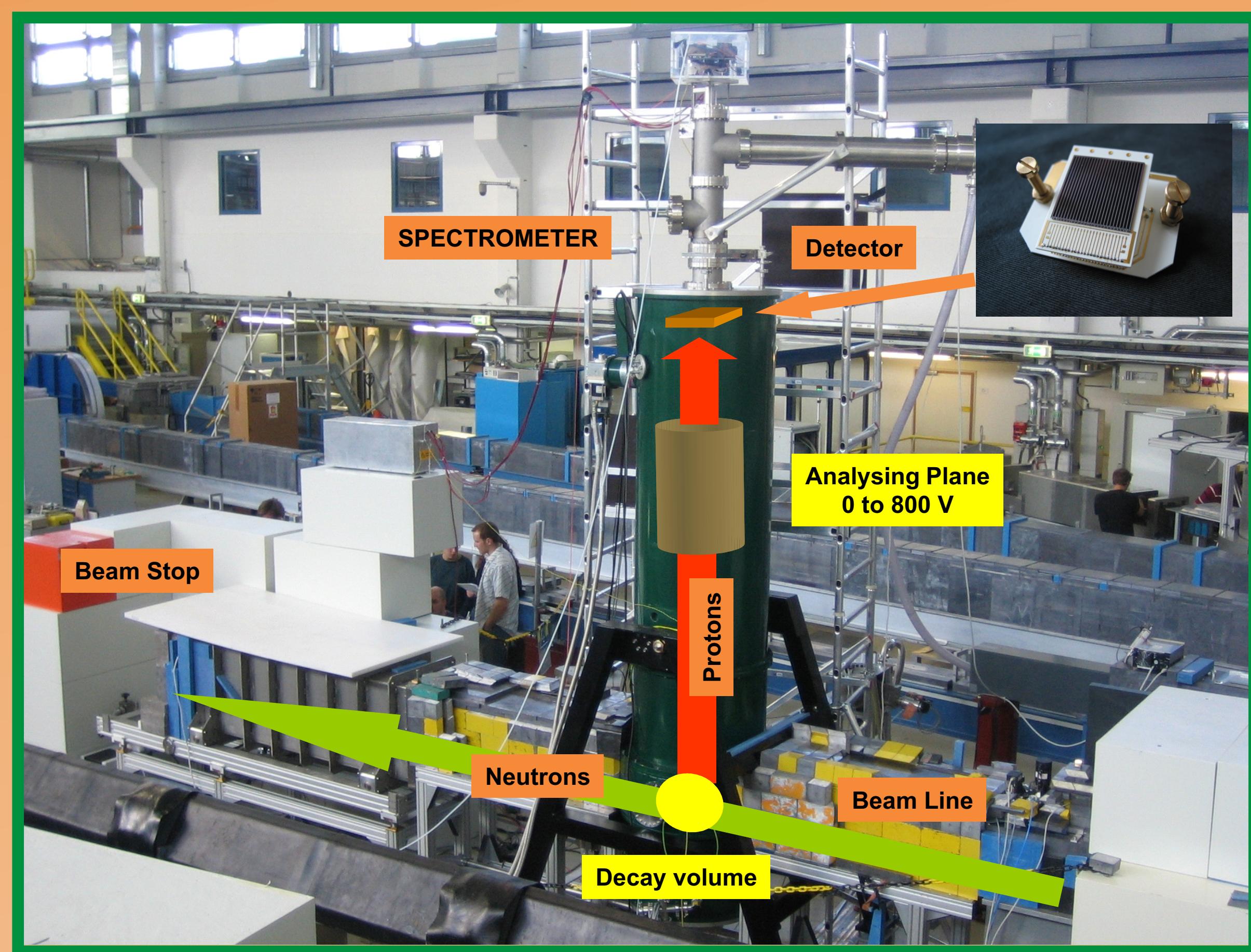
Cabbibo-Kobayashi-Maskawa Matrix

$$\begin{pmatrix} d' \\ s' \\ b' \end{pmatrix} = \begin{pmatrix} V_{ud} & V_{us} & V_{ub} \\ V_{cd} & V_{cs} & V_{cb} \\ V_{td} & V_{ts} & V_{tb} \end{pmatrix} \cdot \begin{pmatrix} d \\ s \\ b \end{pmatrix}$$

Quark eigenstates of the weak interaction do not correspond to the quark mass eigenstates

Unitarity test: $|V_{ud}|^2 + |V_{us}|^2 + |V_{ub}|^2 = 1$

- We expect an accuracy of $\Delta a/a \sim 4 \times 10^{-3}$



Experimental setup at the Mephisto beam line.
Forschungsneutronenquelle
Heinz-Maier-Leibnitz,
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