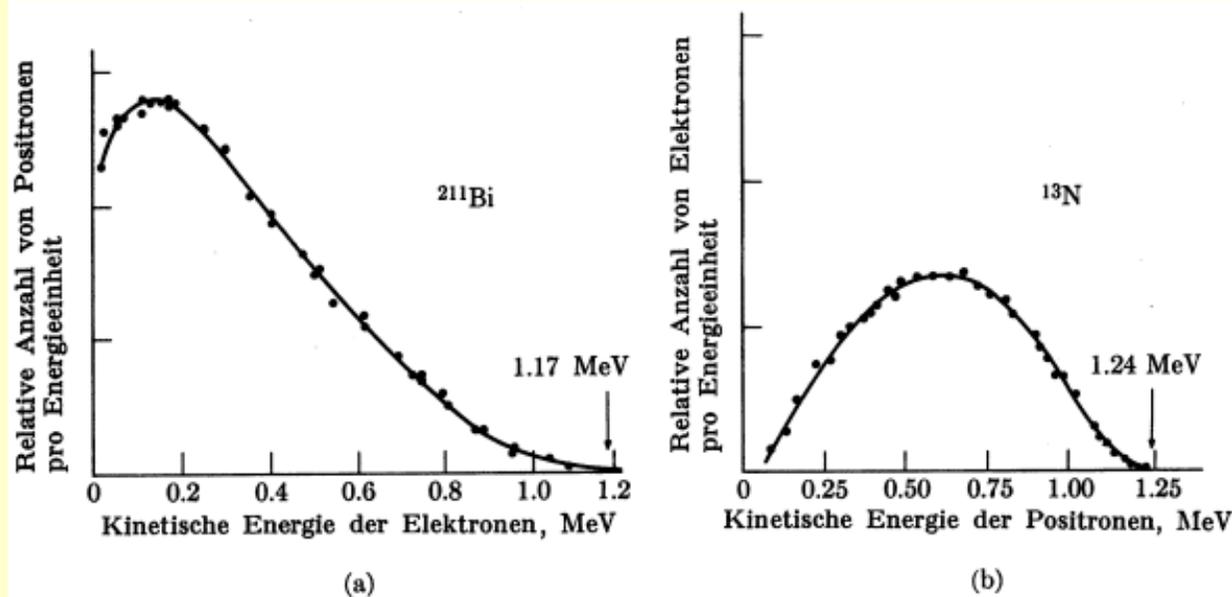
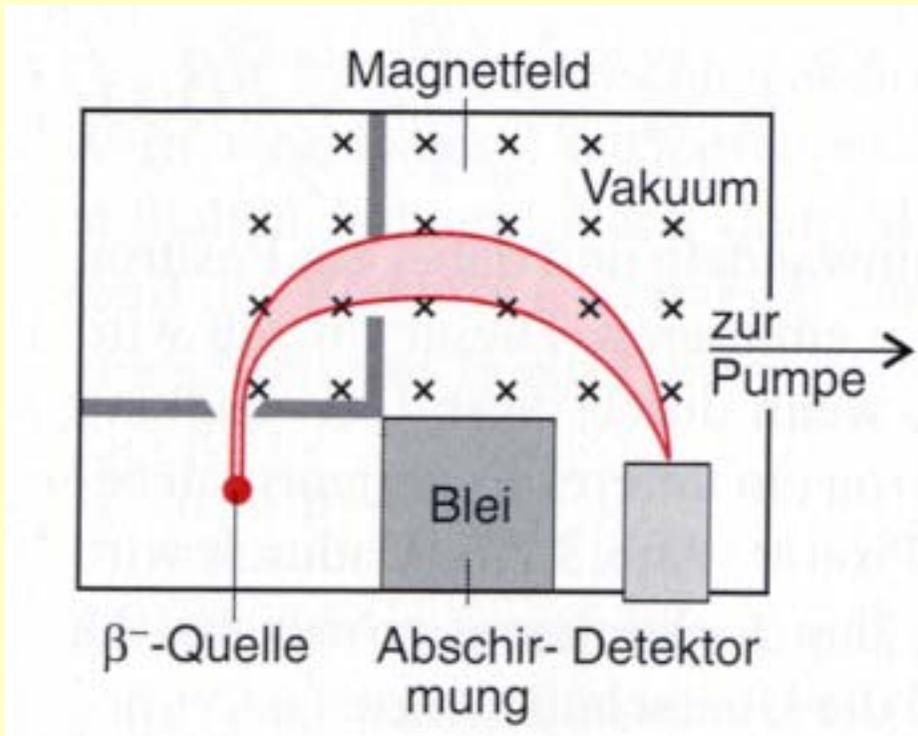
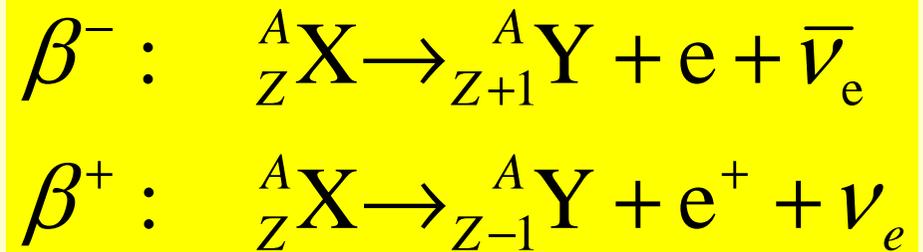


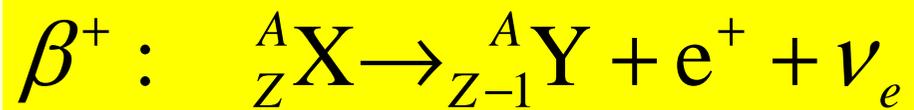
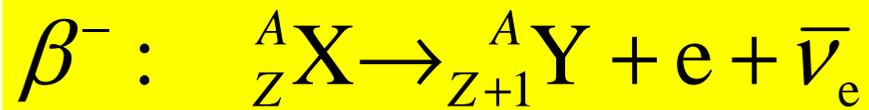
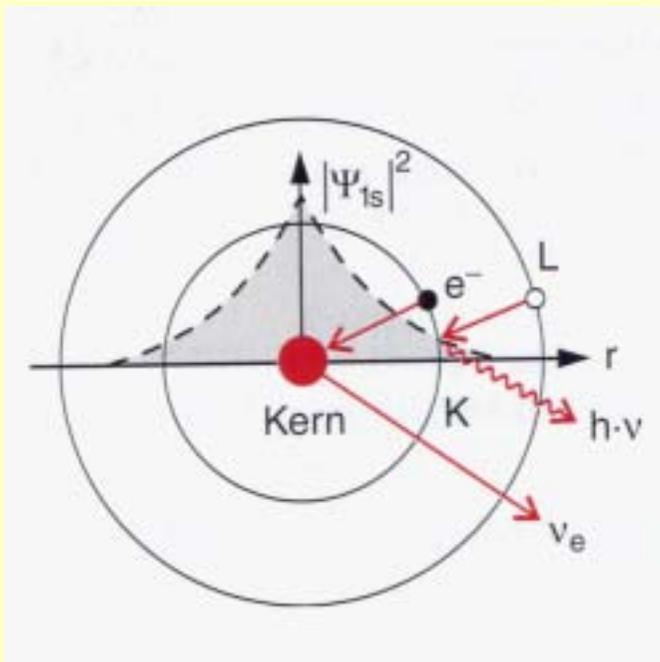
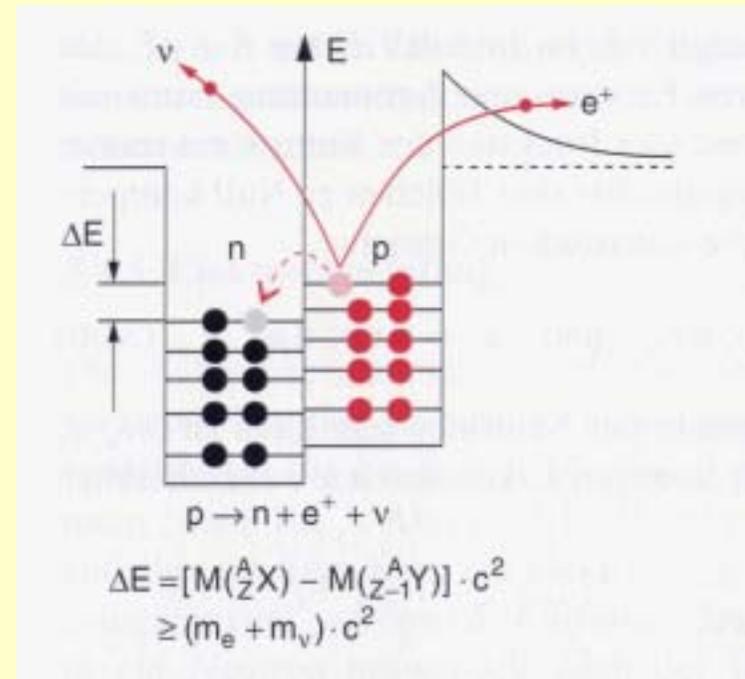
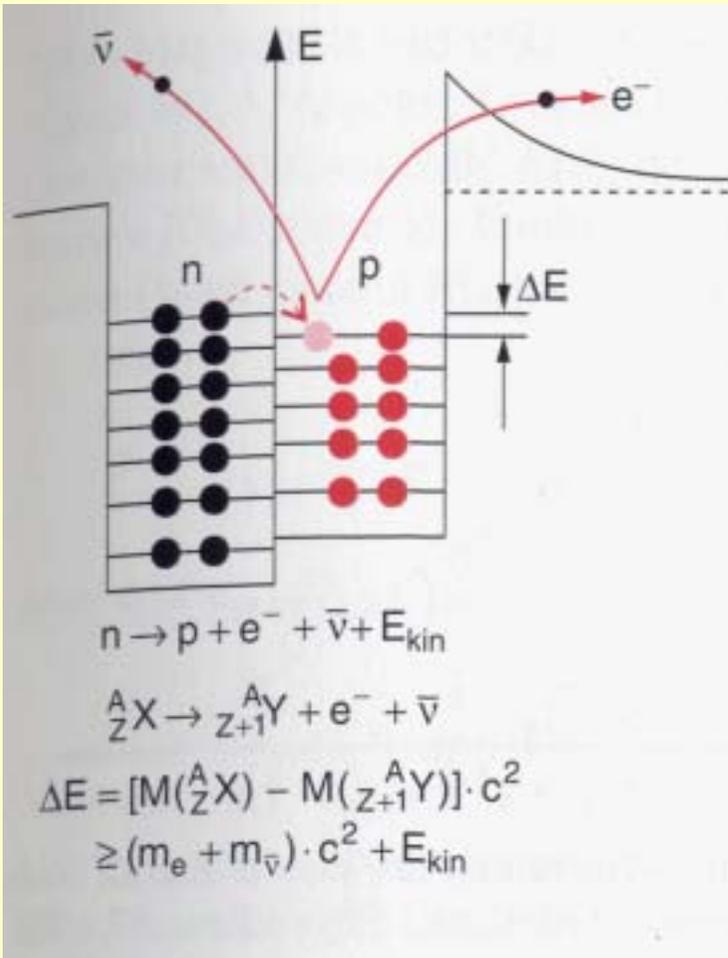
Beta-Zerfall

Kontinuierliches Energiespektrum
Drehimpulserhaltung?

Neutrinohypothese:
1930 von Pauli postuliert
1956 von Reines/Cowan nachgewiesen



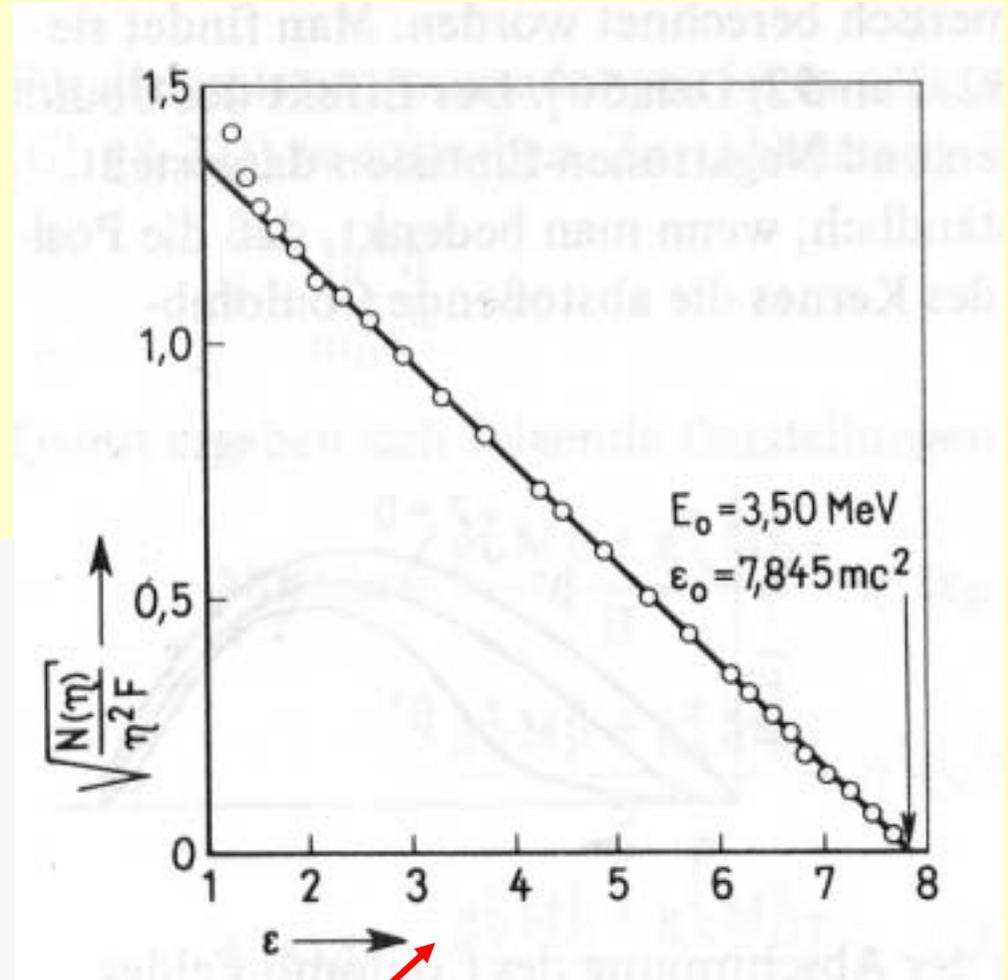
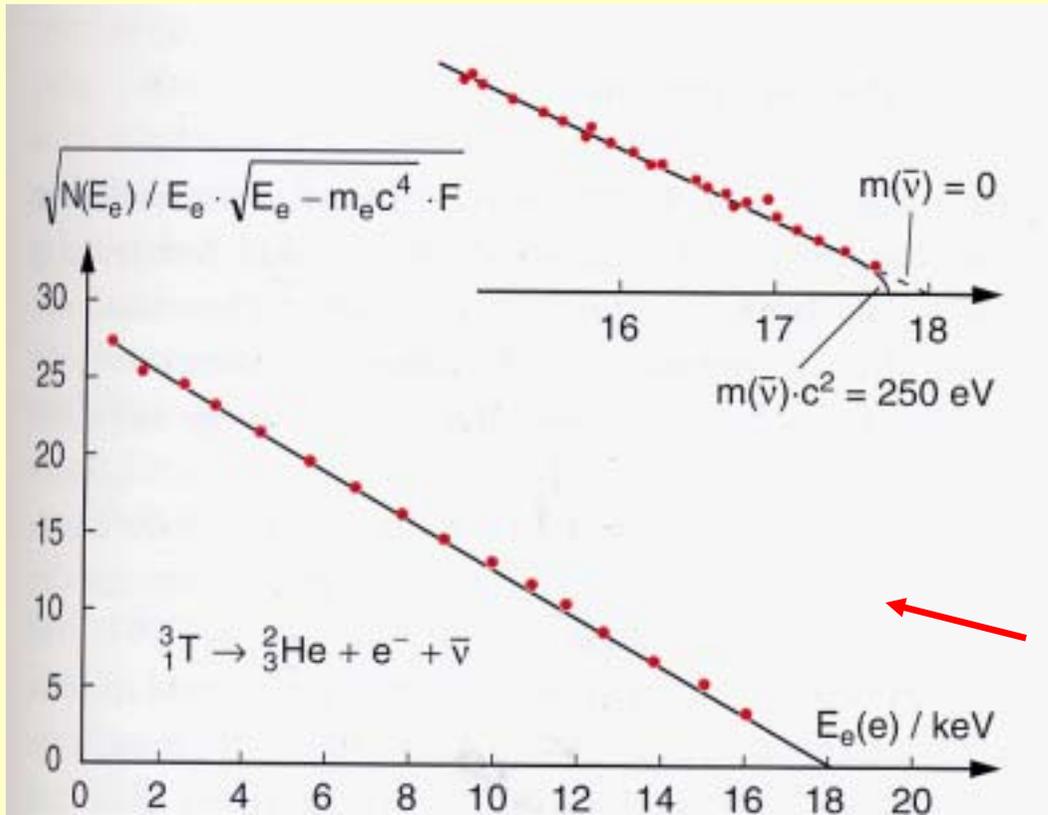
Beta-Zerfall



Beta-Zerfall

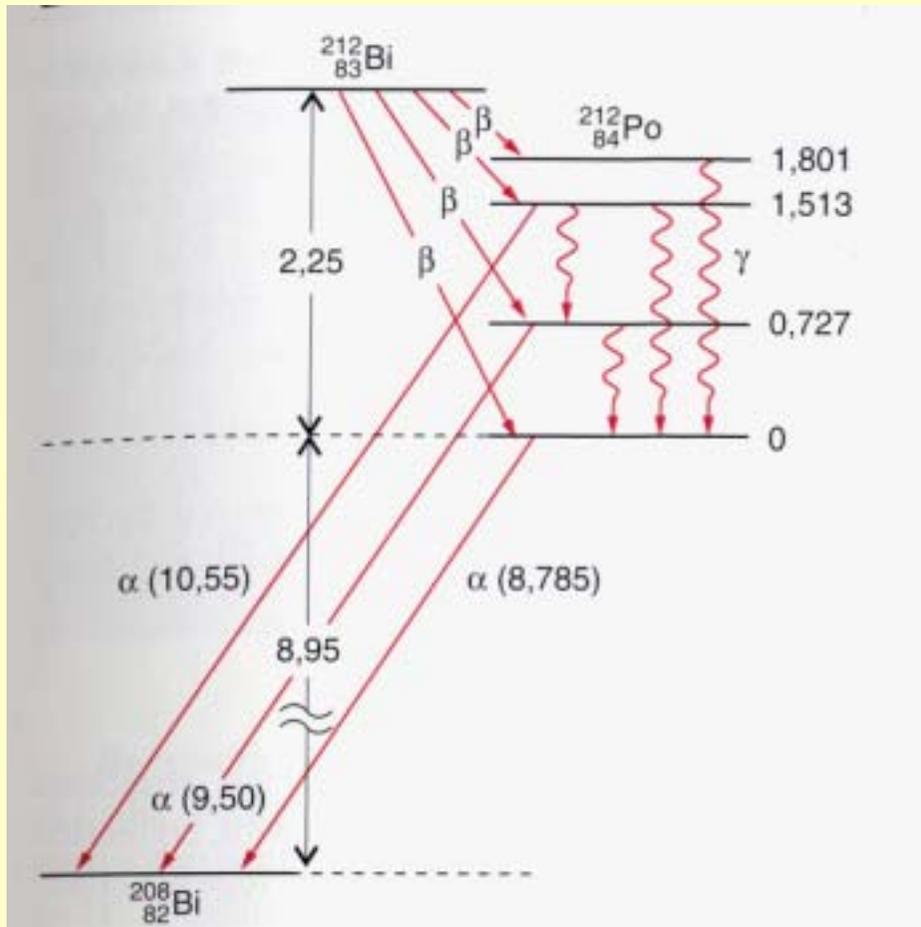
$$W(E)dE =$$

$$a_2 \cdot W_{if} \cdot E_e \cdot \sqrt{E^2 - m_e^2 c^4} (E - E_e)^2 dE$$



Fermi-Kurie-Plot

Gamma-Zerfall



hochenergetische Photonen
diskretes Energiespektrum

bei Übergängen zwischen
verschiedenen Kernspins \vec{I} :
 ΔI geht an γ -Quant mit

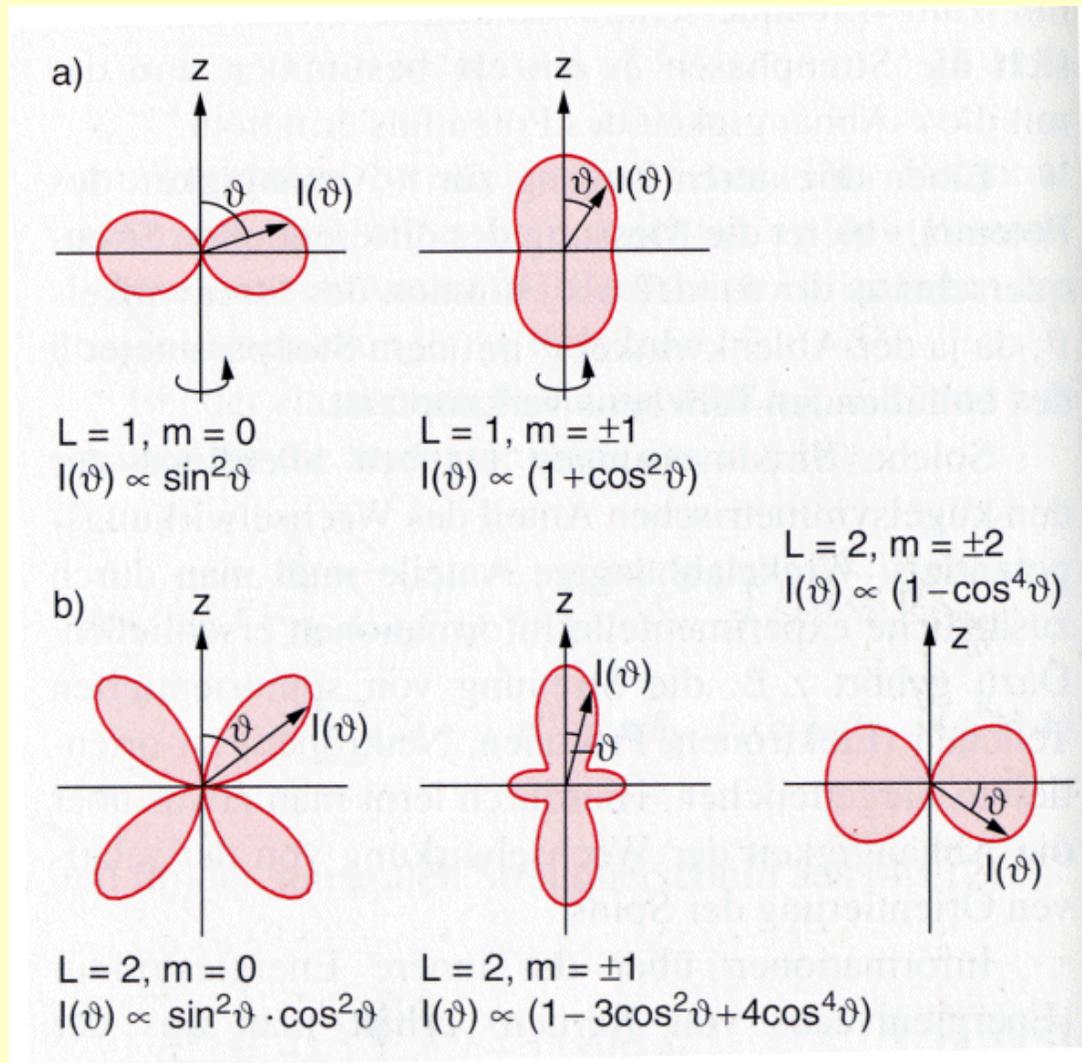
$$\Delta \vec{I} = \vec{L} \quad |\vec{L}| = \sqrt{L(L+1)}\hbar$$

Multipolmoden 2^L $L=0,1,2,\dots$

elektrische und magnetische
Multipolmoden

Gamma-Zerfall

Winkelverteilung abh. von Multipolordnung L



$$I \propto |Y_L^m|^2$$

im thermischen Ggw alle m gleich besetzt

→ γ -Strahlung isotrop

Vorzugsrichtung z.B. durch äußeres Magnetfeld