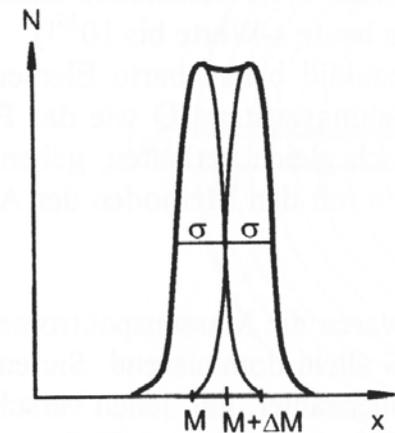
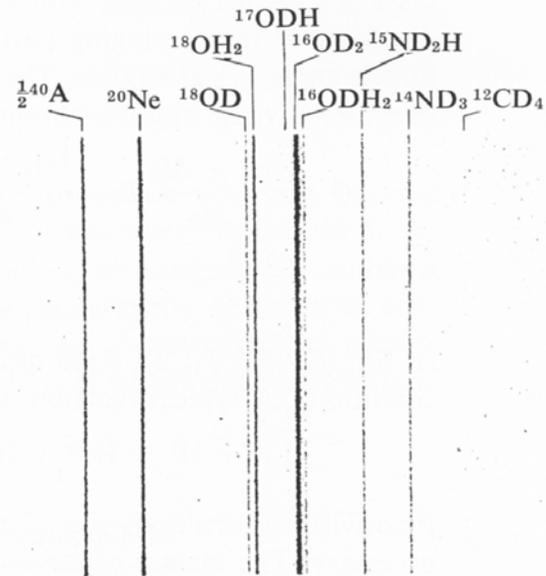
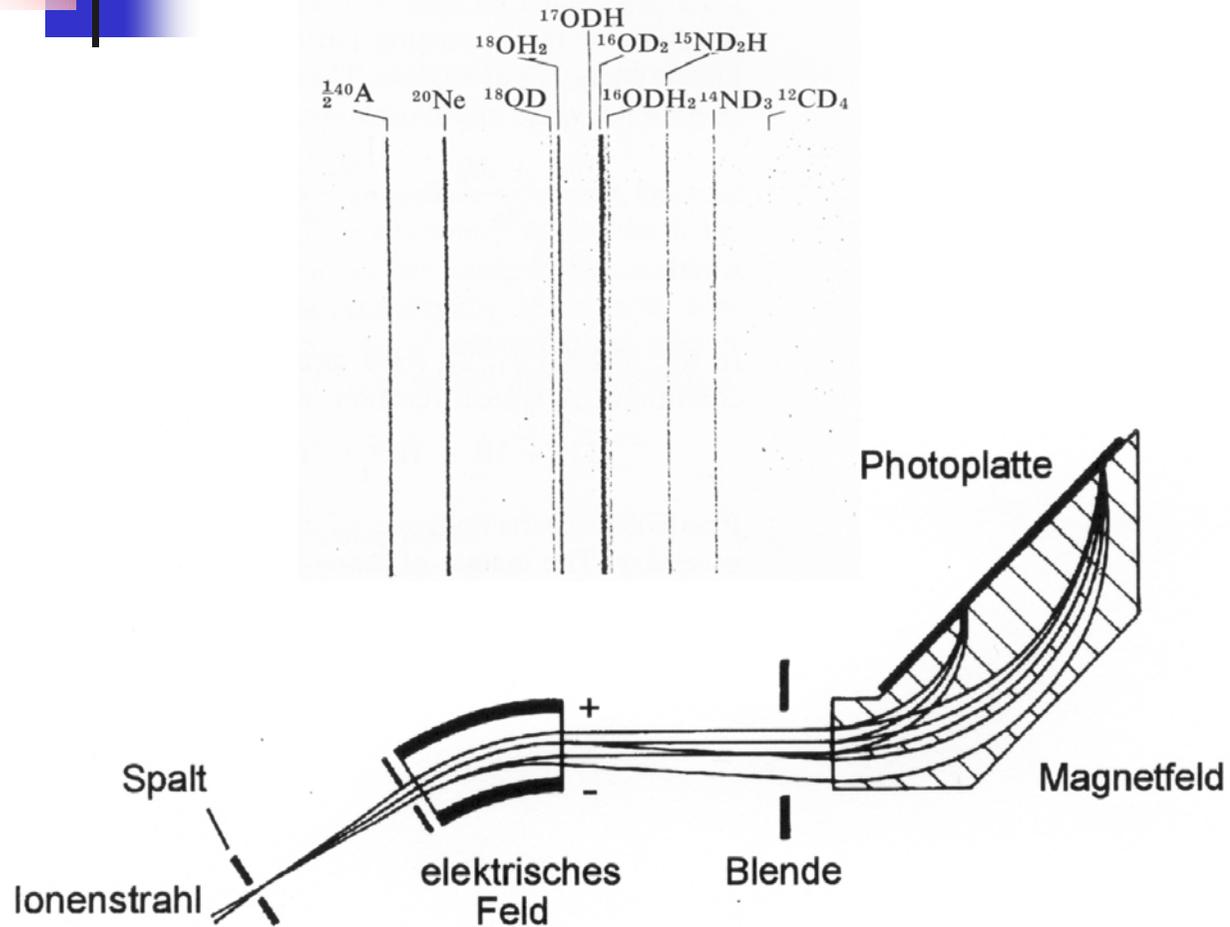
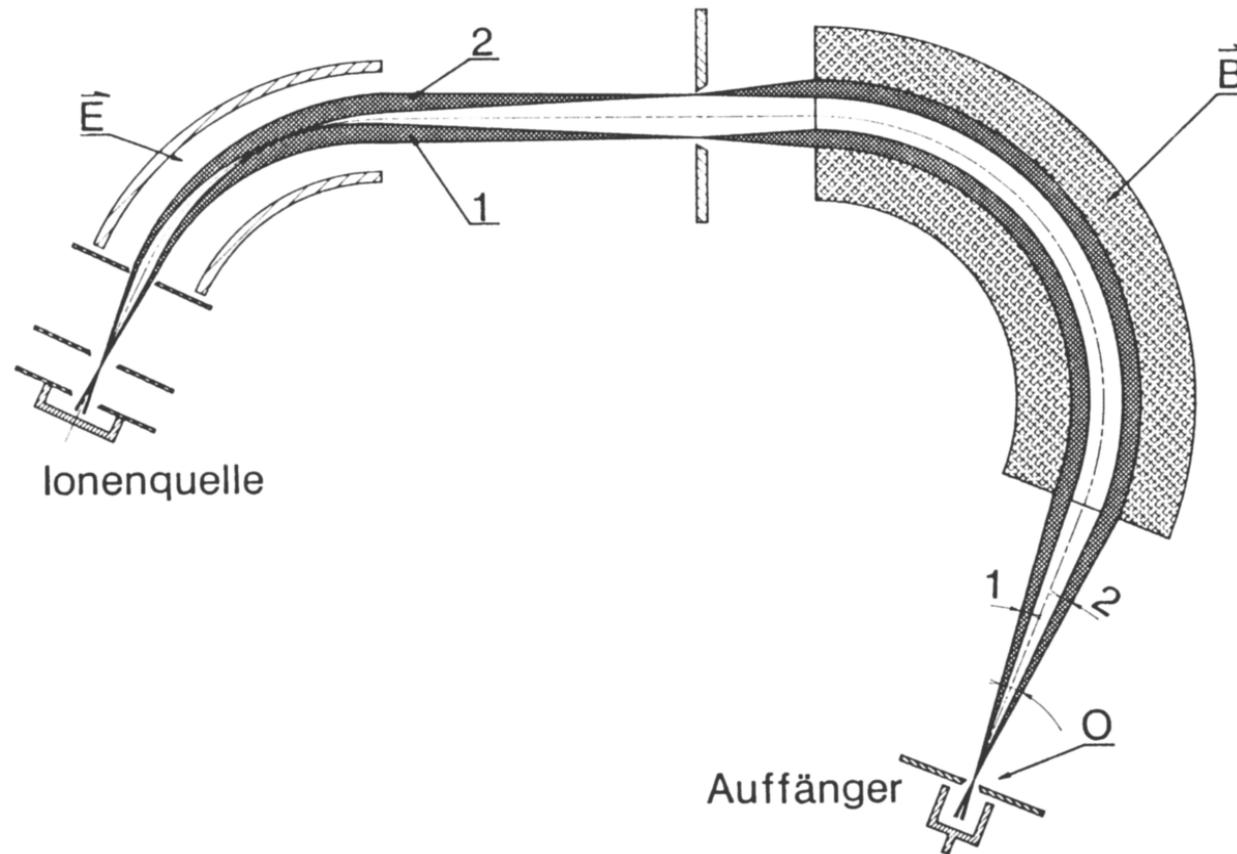


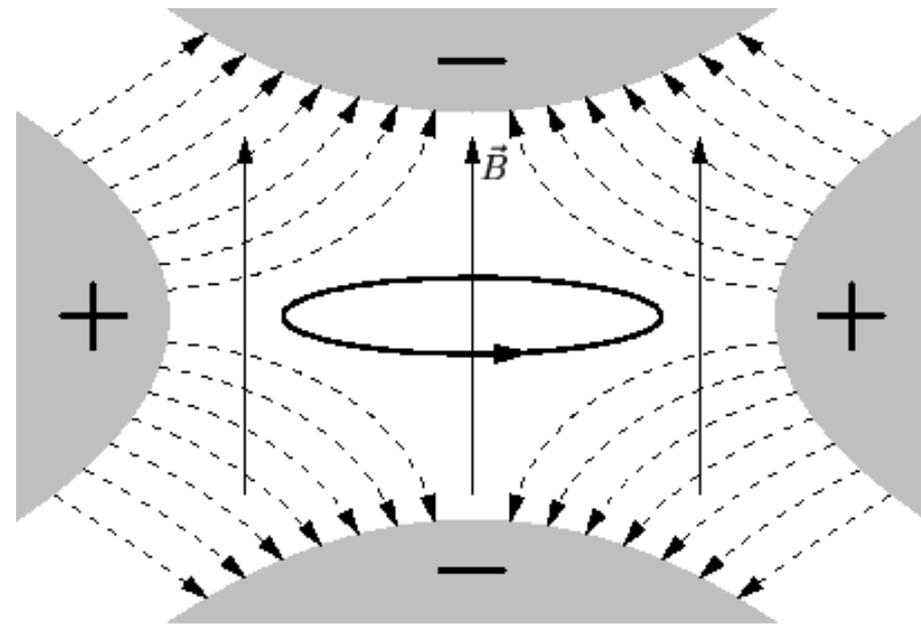
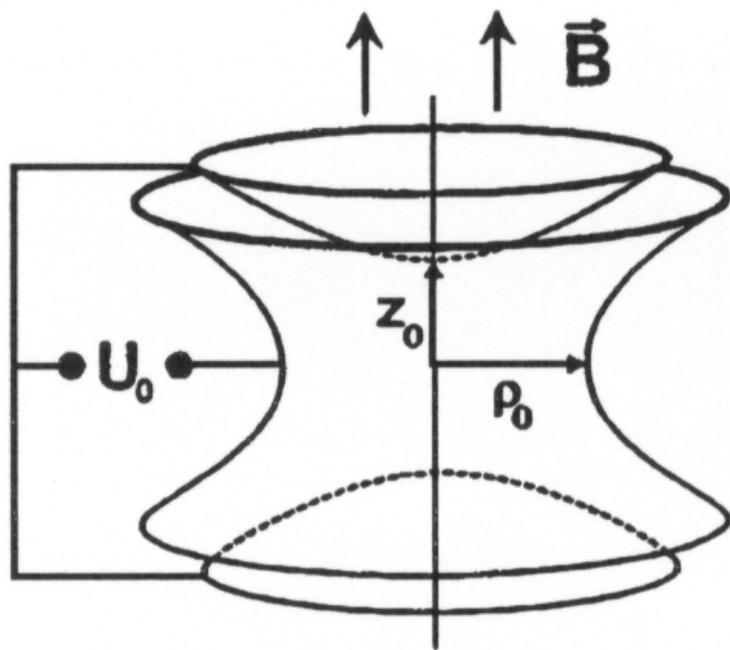
# Massenspektrograph



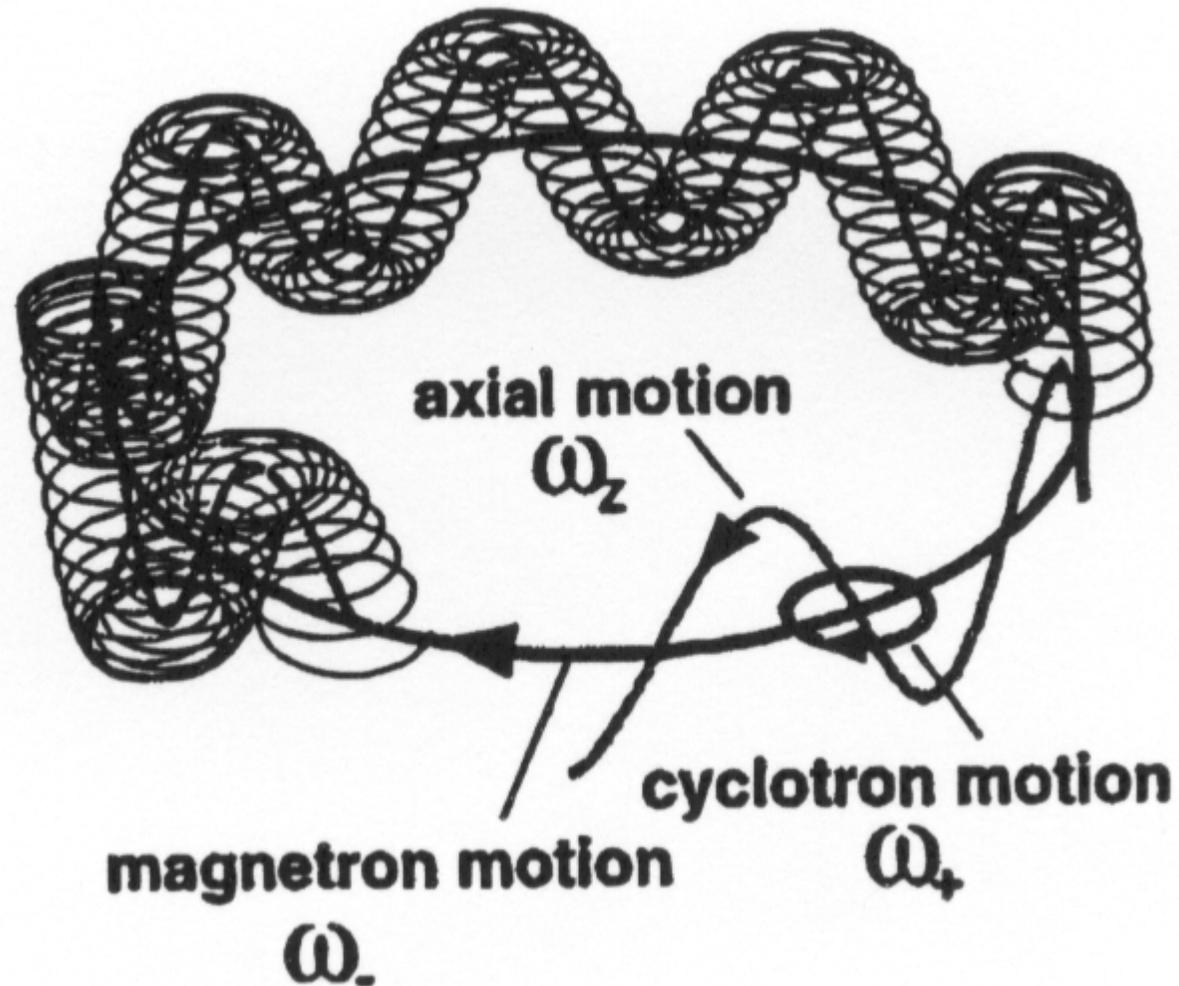
# Massenspektrometer



# Die Penning Falle

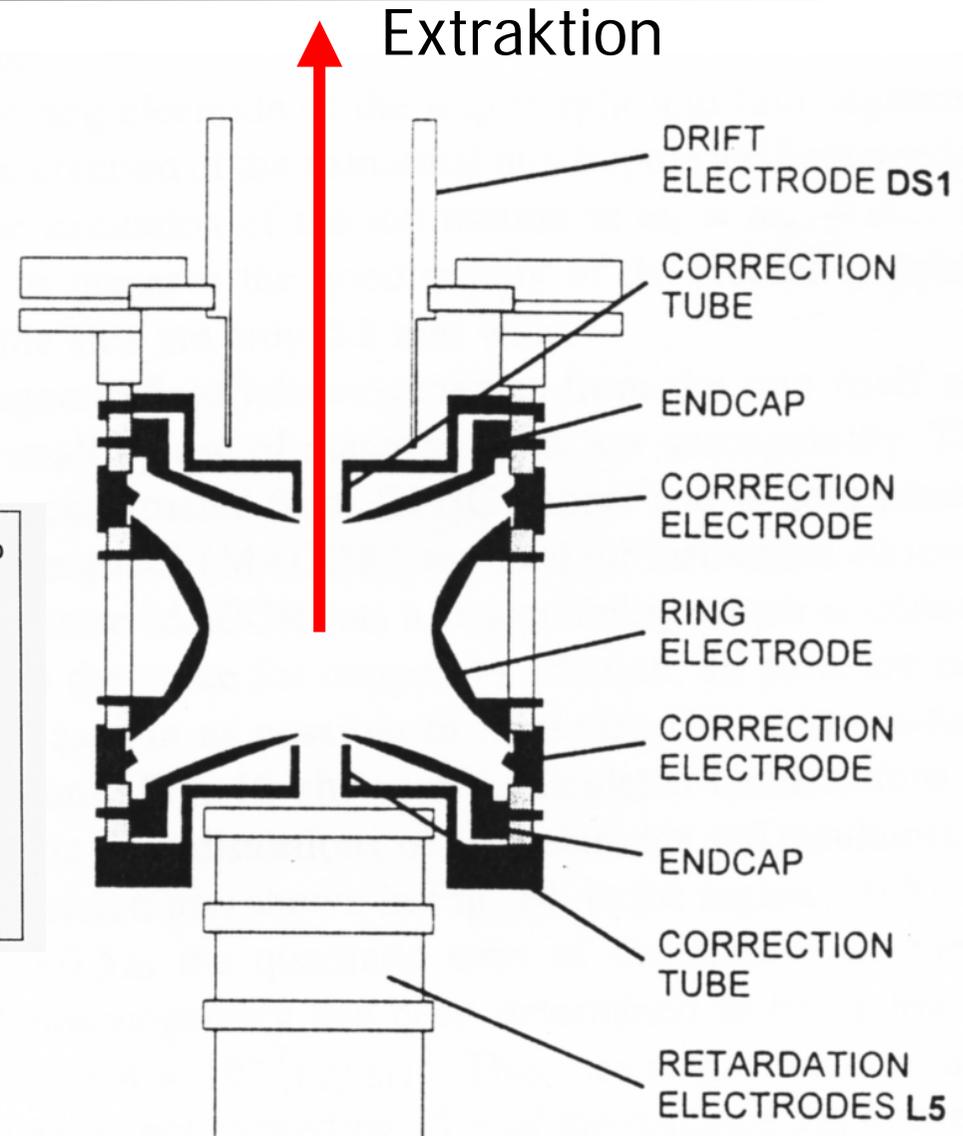
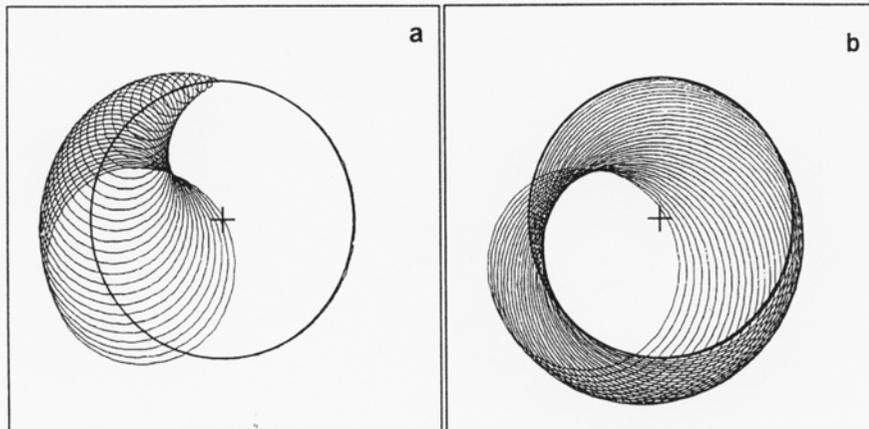


# Bewegung in der Penning Falle

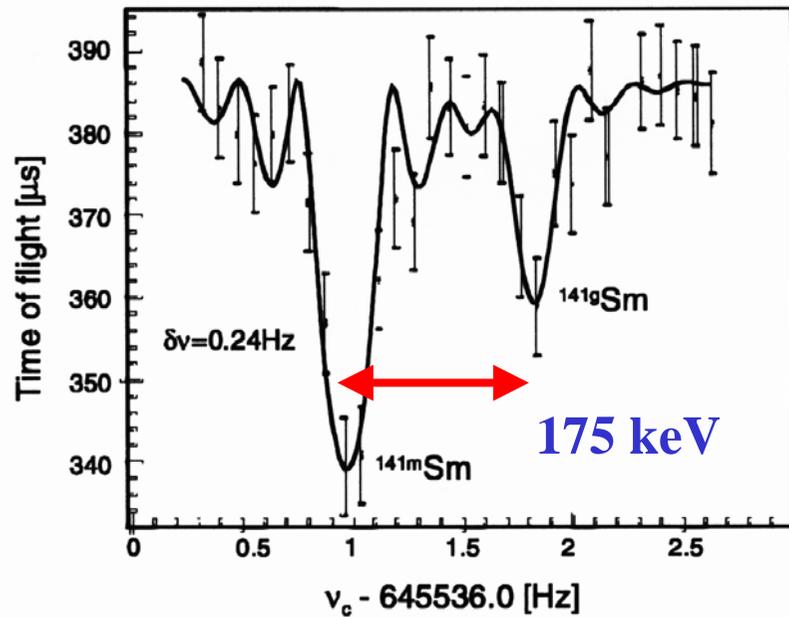


# Resonante Flugzeitmessung in der Penning Falle

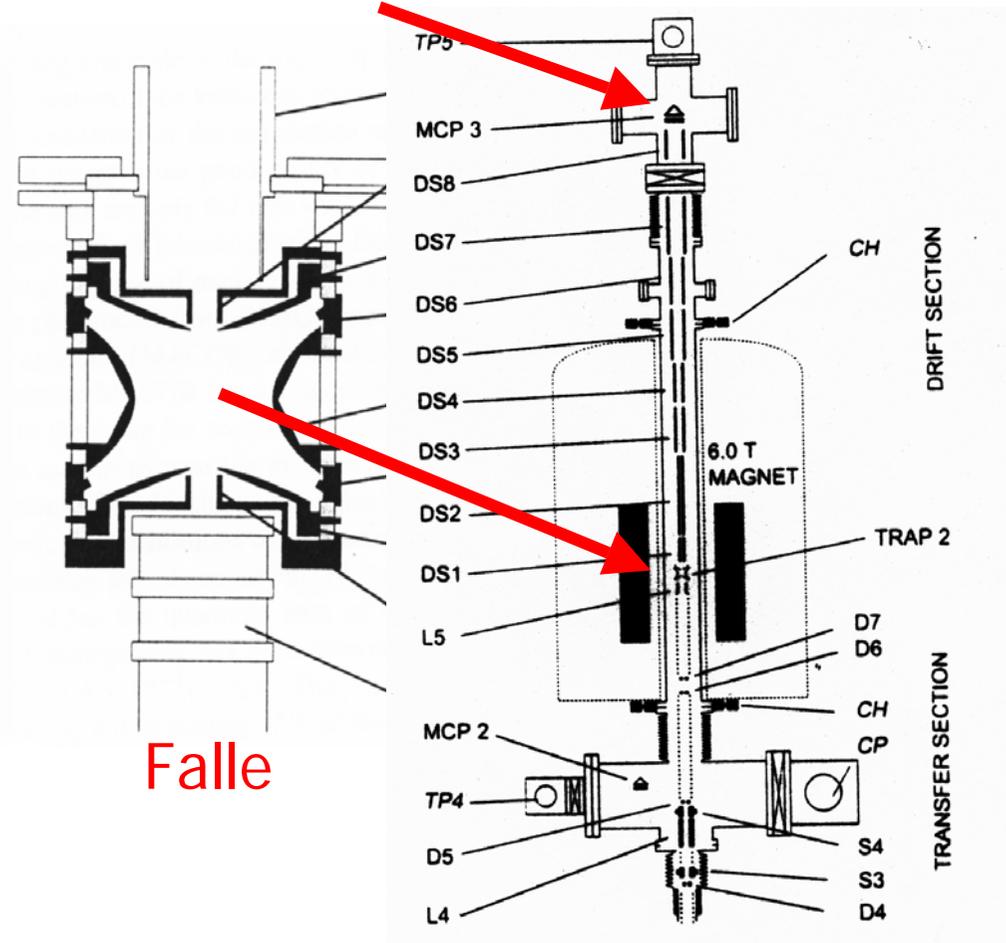
Umwandlung von  
Magnetron- in  
Zyklotronbewegung



# Flugzeitmessung mit ISOLTRAP (CERN)

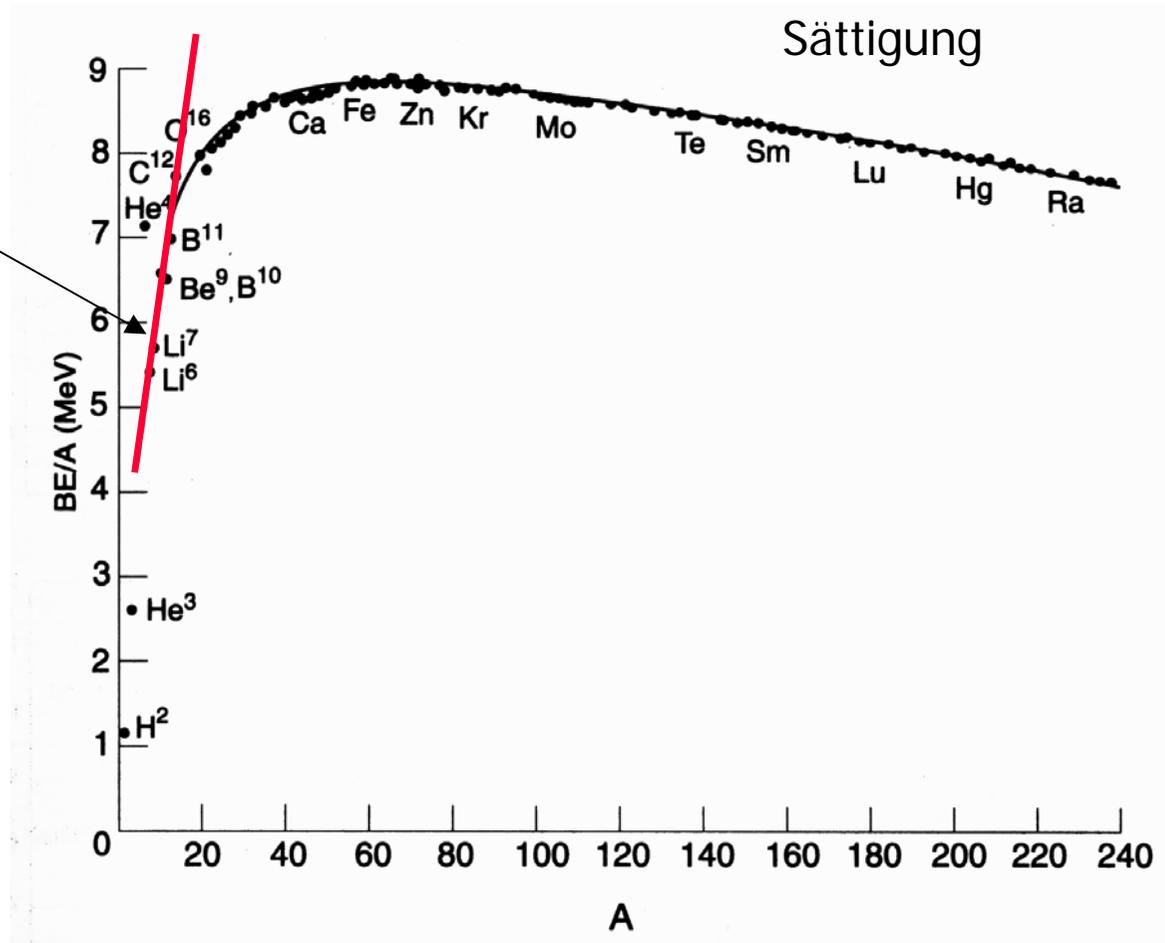


Flugzeitdetektor



# Bindungsenergie pro Nukleon

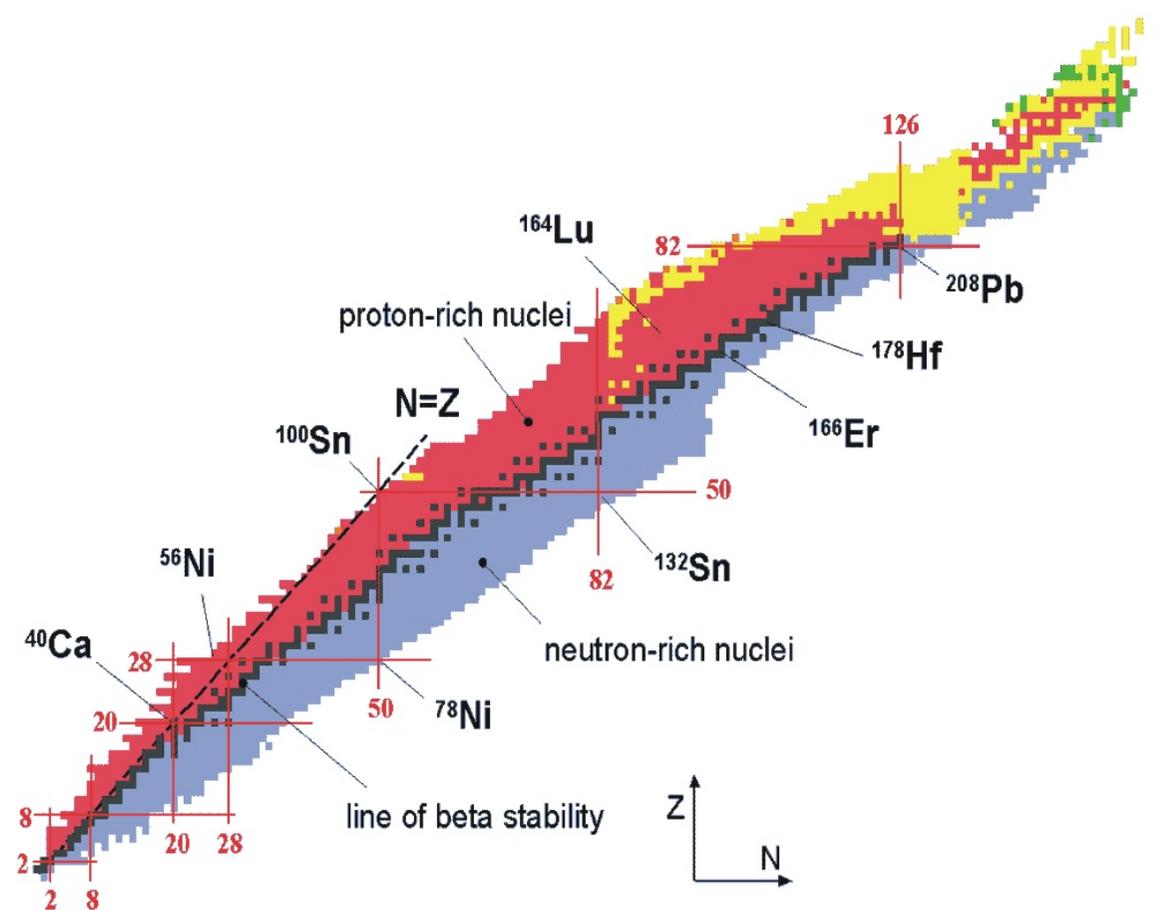
Linearer Anstieg



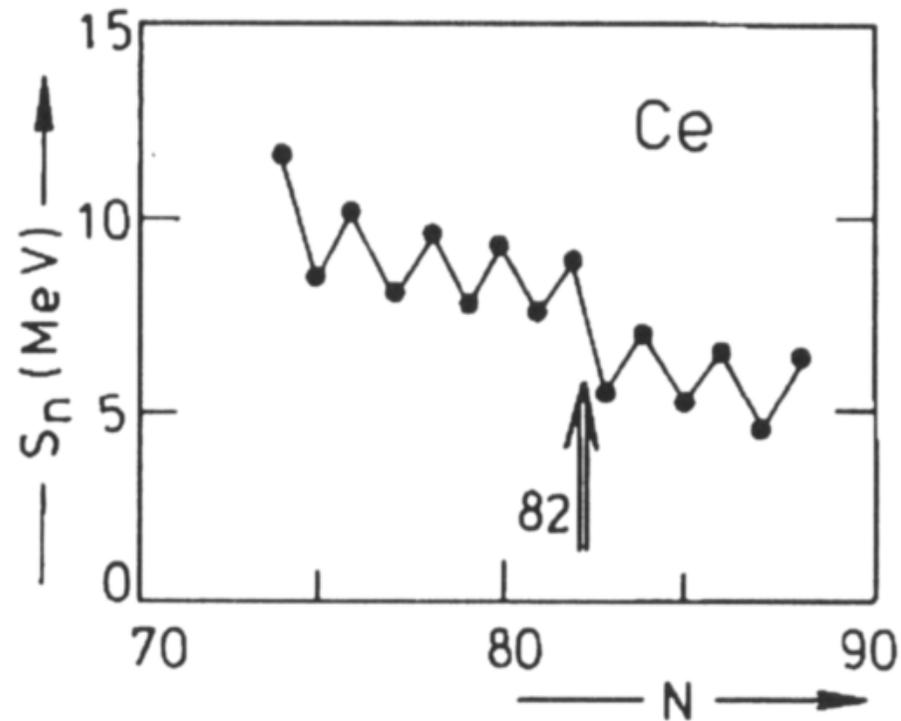
# Nuklidkarte

Schwere Kerne sind neutronenreich

leichte Kerne  
haben Präferenz  
für  $N=Z$

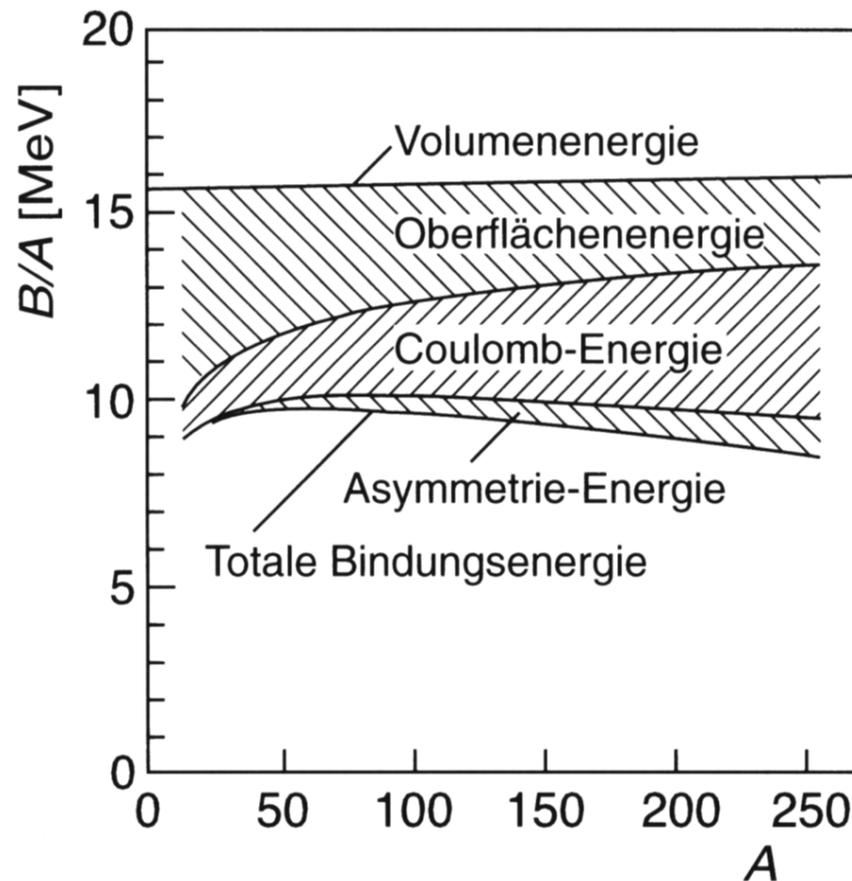


# Oszillationen in den Separationsenergien



# Beiträge zur Bindungsenergie

$$BE(A, Z) = a_V A - a_S A^{2/3} - a_C \frac{Z(Z-1)}{A^{1/3}} - a_A \frac{(Z - A/2)^2}{A} \pm \delta$$



Mögliche Parameter

$$a_V = 15,85 \text{ MeV},$$

$$a_S = 18,34 \text{ MeV},$$

$$a_C = 0,71 \text{ MeV},$$

$$a_A = 92,84 \text{ MeV},$$

$$a_P = 12,0 \text{ MeV}.$$