Bestimmung der Proton-Formfaktoren

Experiment

SLAC 1956: R. Hofstadter, R.W. Allis

a) Mott: Spin ½ Elektron an Spin 0 (Punktförmig): $G_E = 1$, $G_M = 0$

b) Dirac: Spin ½ Elektronen an Spin ½ Proton (punktf): $G_E = 1$, $G_M = 1$

c) Wie Dirac aber anomales magn. Moment: $G_E = 1$, $G_M = 2.79$

d) Rosenbluth: Punktf Spin ½ Elektronen an ausgedehntem Spin ½ Proton

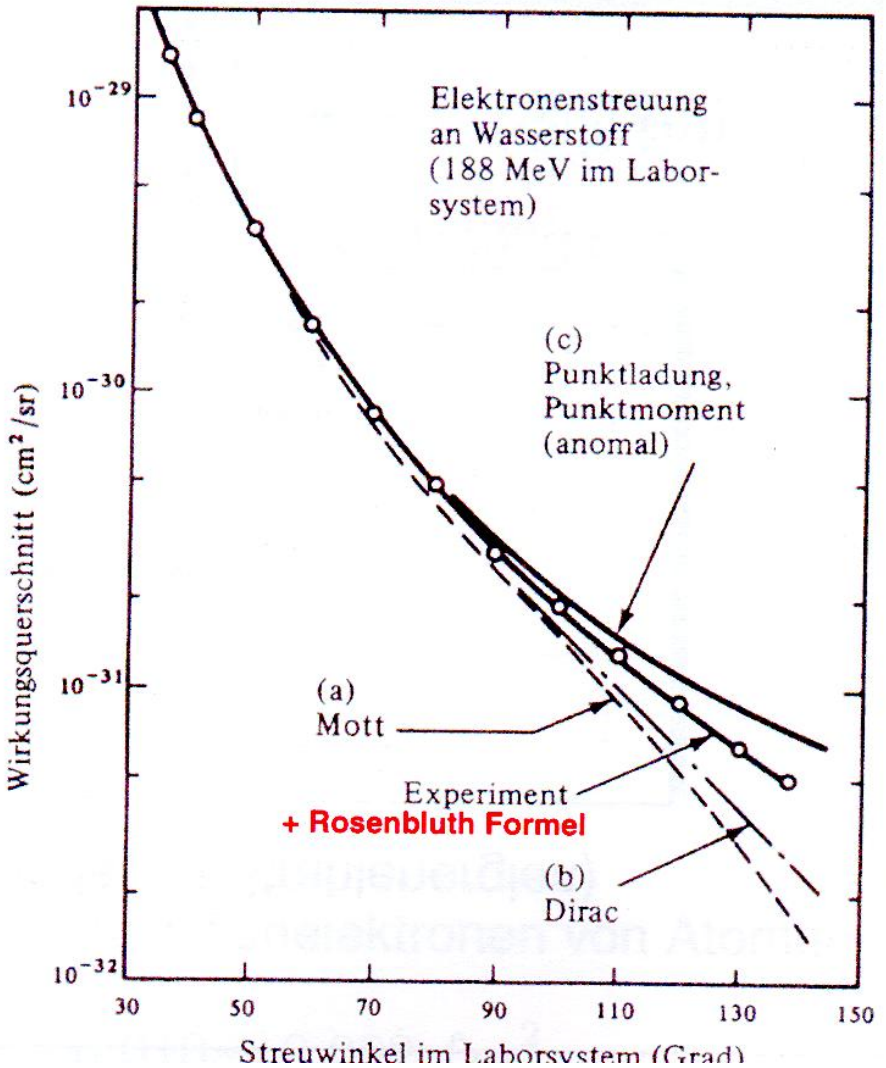
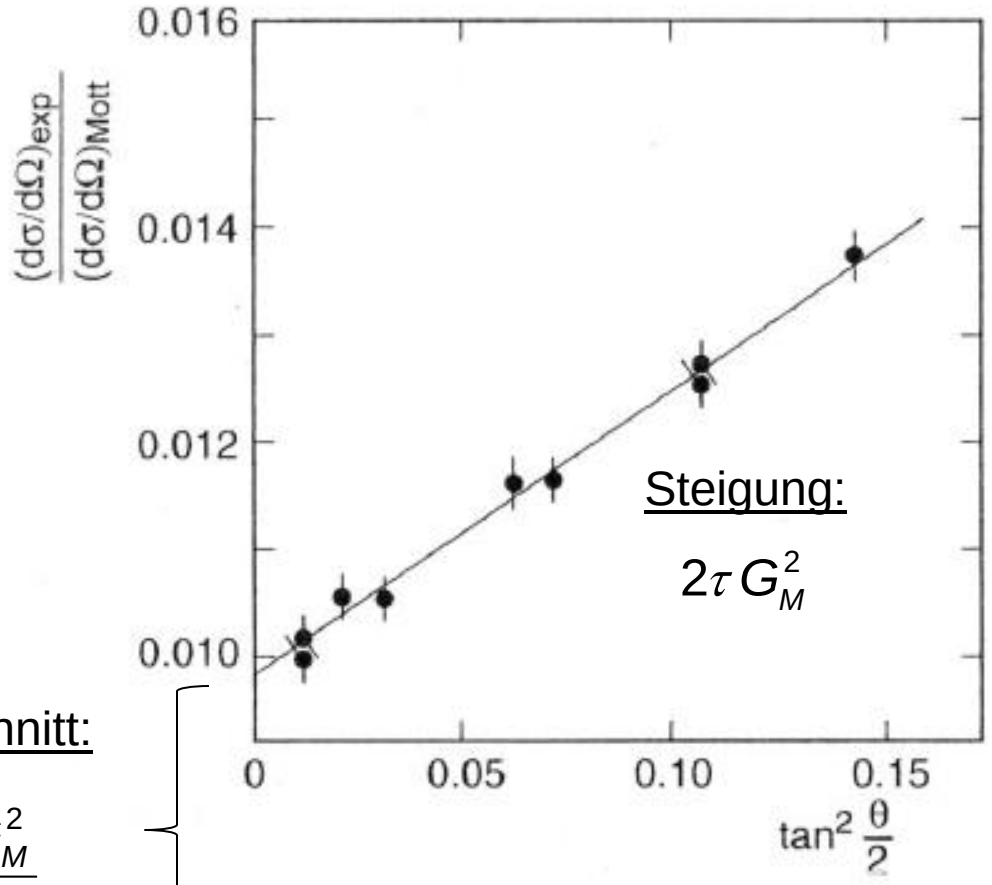


Fig-TP-4.7

Rosenbluth-Diagramm: elektrischer + magnetischer FF



Steigung:

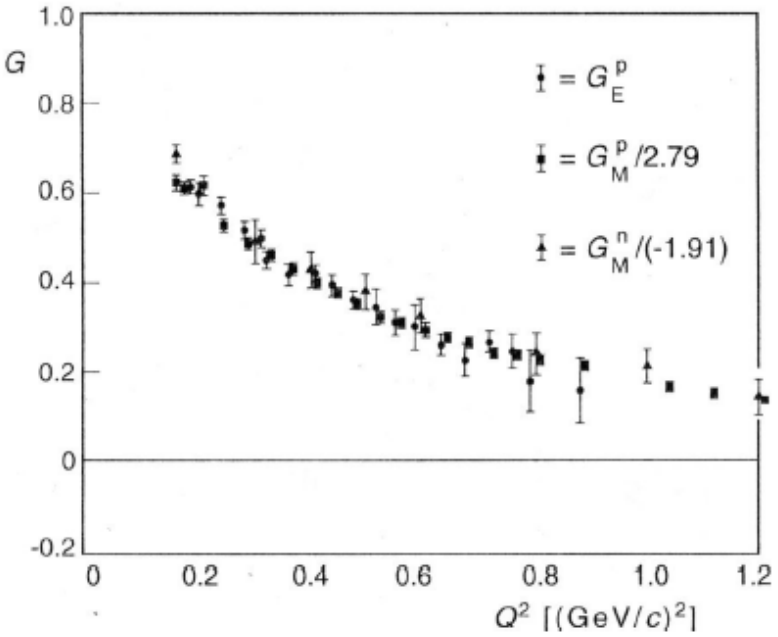
$2\tau G_M^2$

Y-Achsenabschnitt:

$$\frac{G_E^2 + \tau G_M^2}{1+\tau}$$

Fig-TP-4.8

Elektrischer und magnetischer Formfaktor



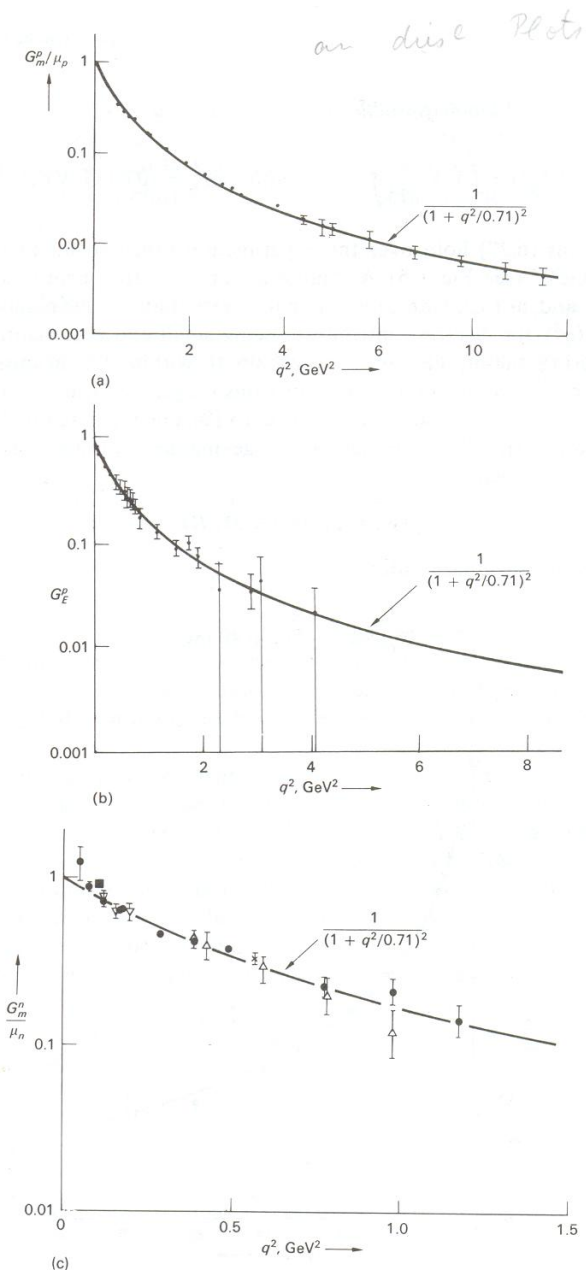


Fig-TP-4.9