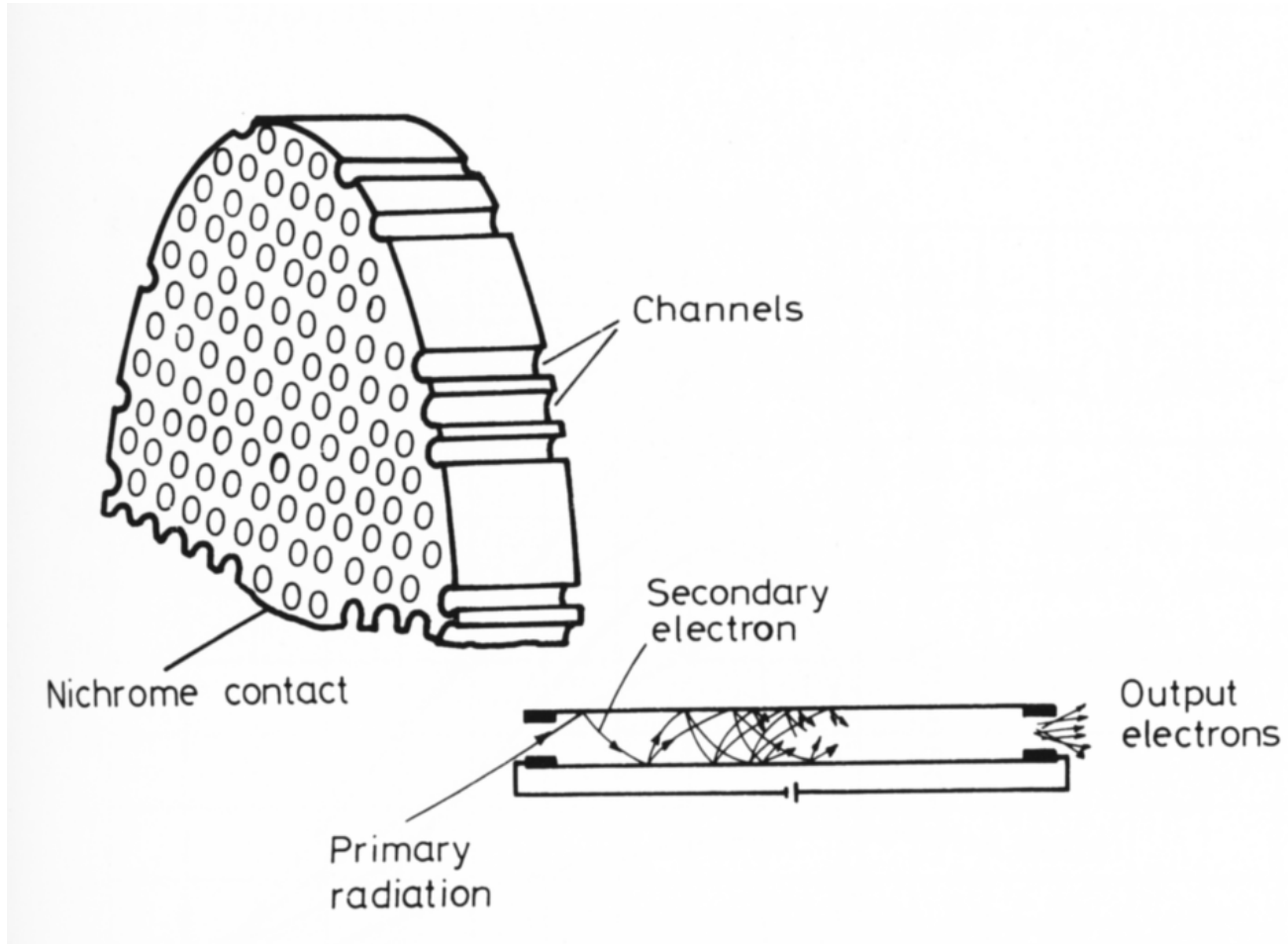




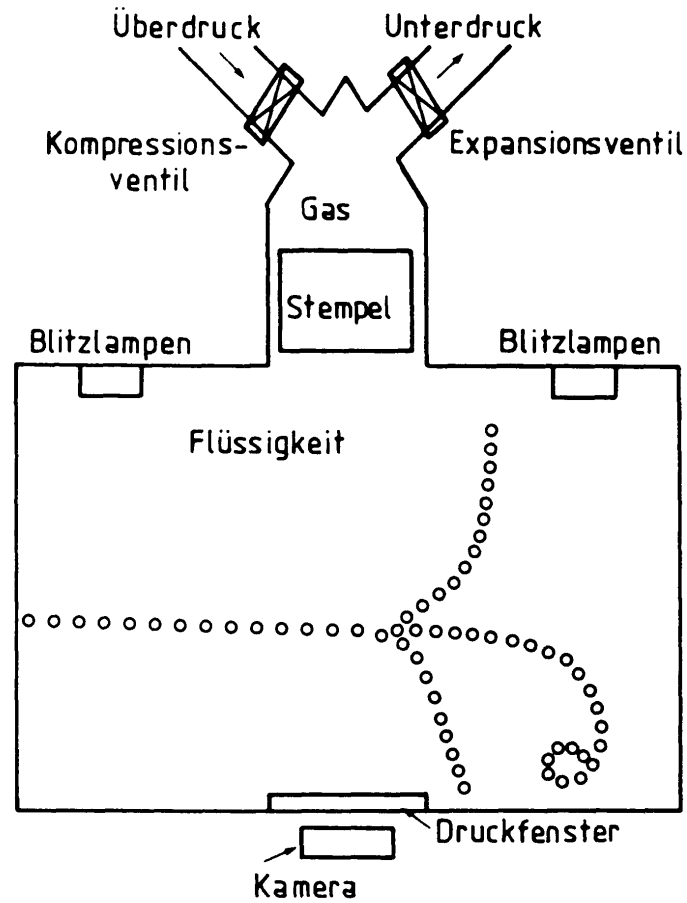
# Detektoren

---

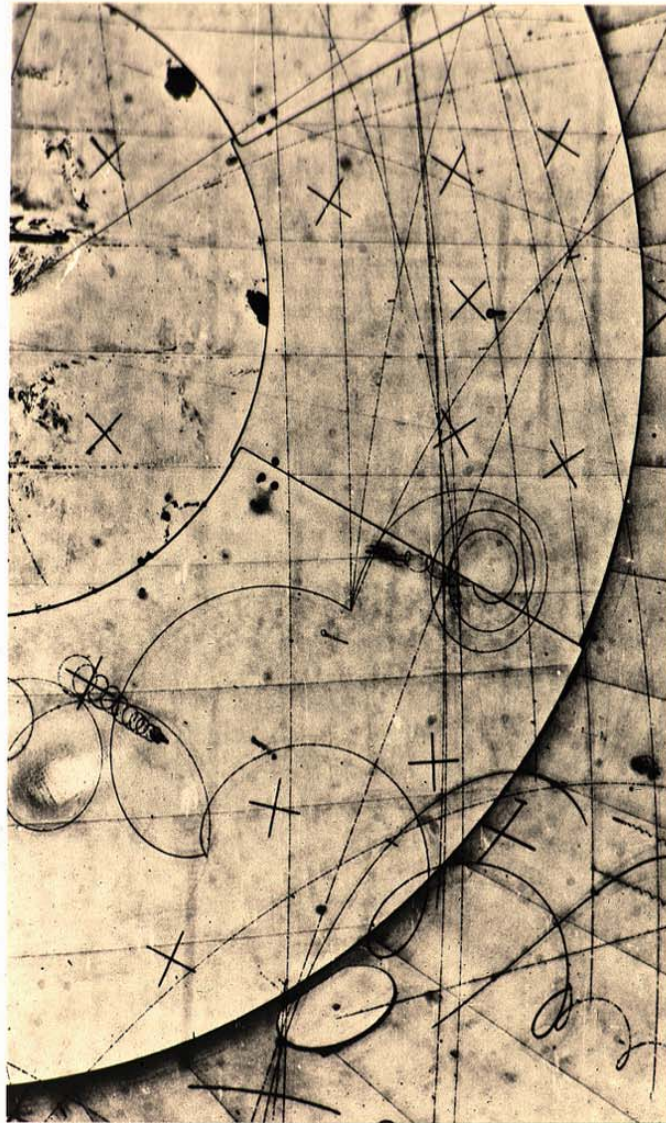
# Microchannelplates



# Blasenkammer



# Blasenkammerereignis



AACHEN-BONN-CERN-MUNICH-OXFORD COLLABORATION

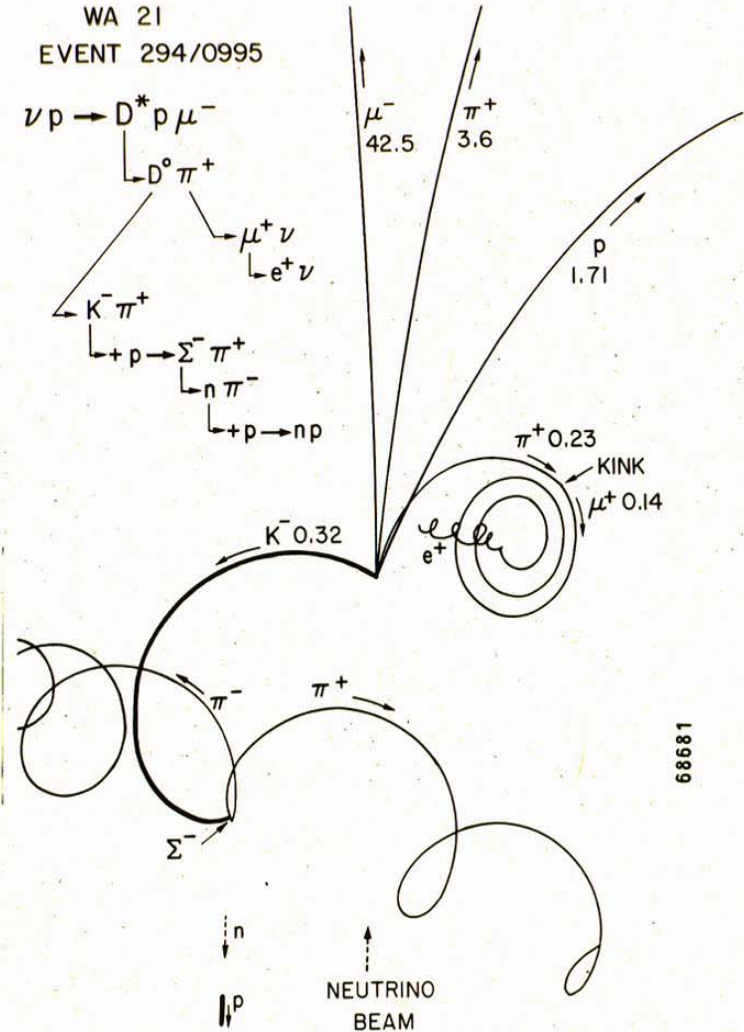
WA 21

EVENT 294/0995

$\nu p \rightarrow D^* p \mu^-$

$D^* \rightarrow D^0 \pi^+$   
 $\mu^- \rightarrow \mu^+ \nu$   
 $\mu^- \rightarrow e^+ \nu$

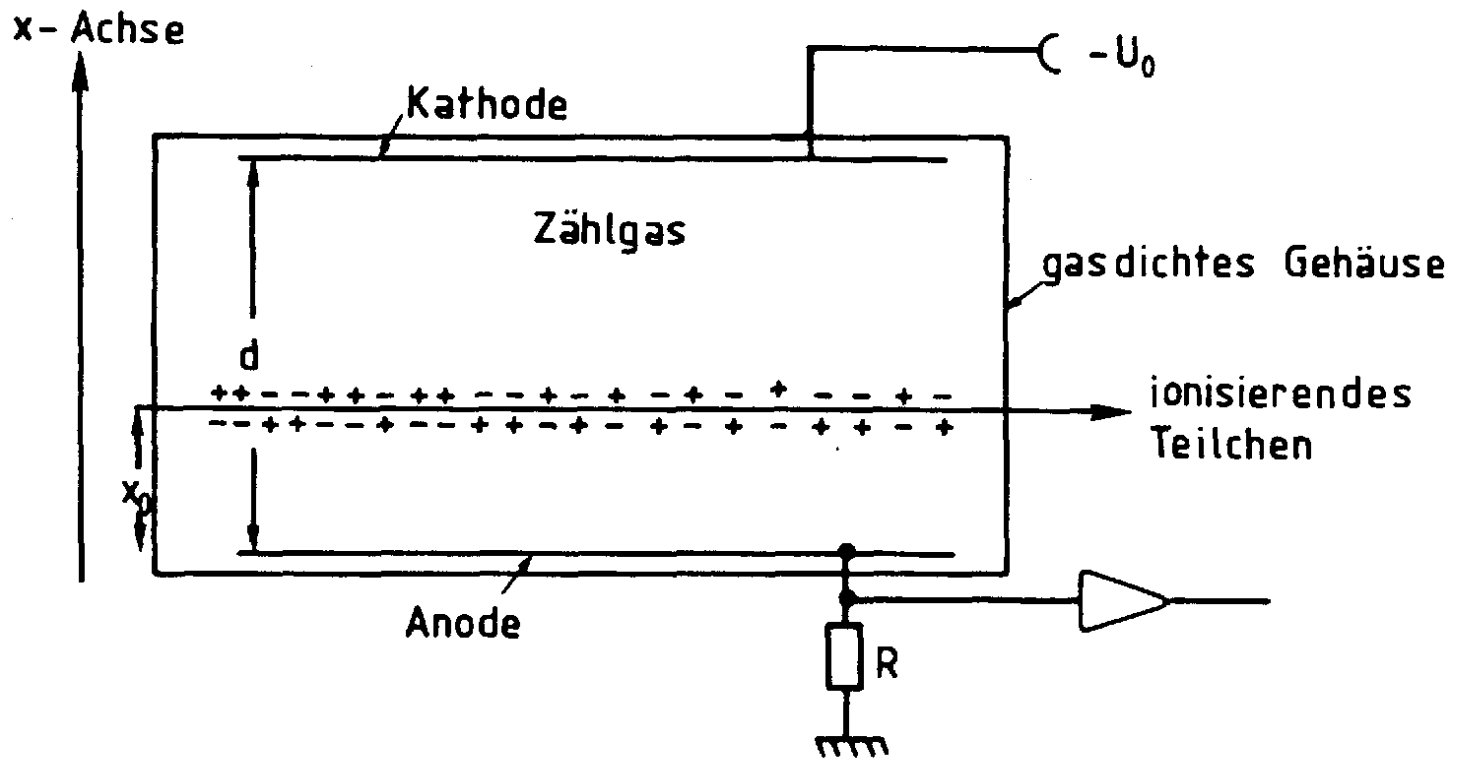
$K^- \pi^+$   
 $+ p \rightarrow \Sigma^- \pi^+$   
 $\Sigma^- \rightarrow n \pi^-$   
 $+ p \rightarrow np$



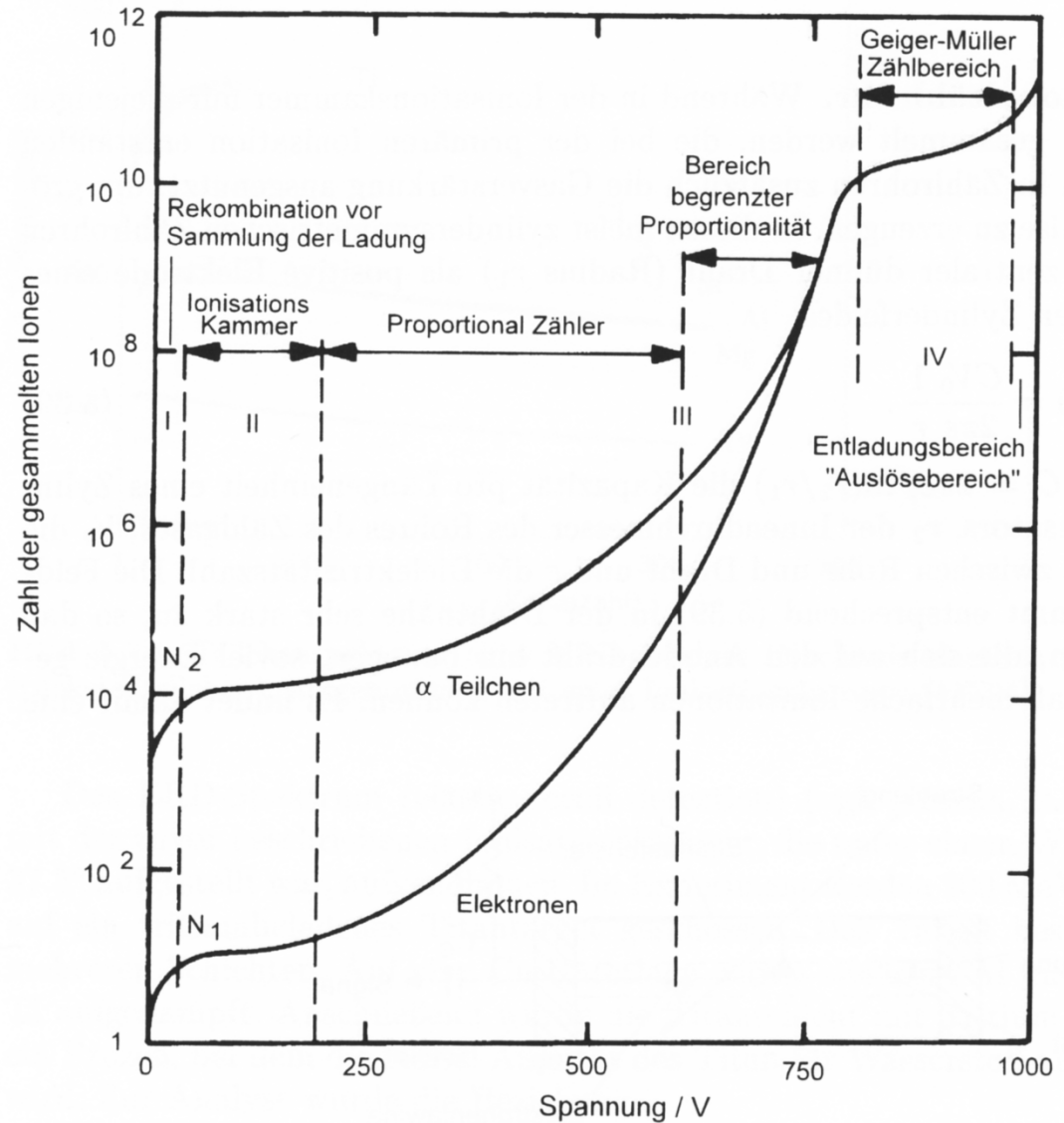
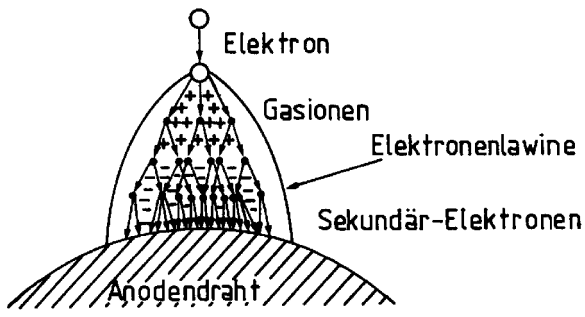
68681

MOMENTUM IN GeV/c

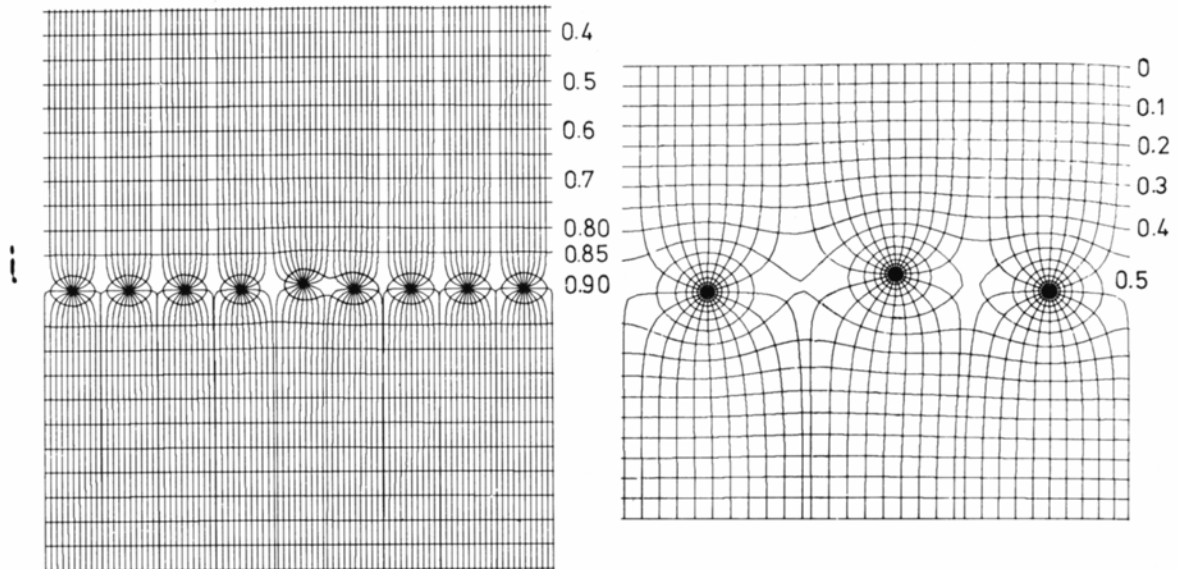
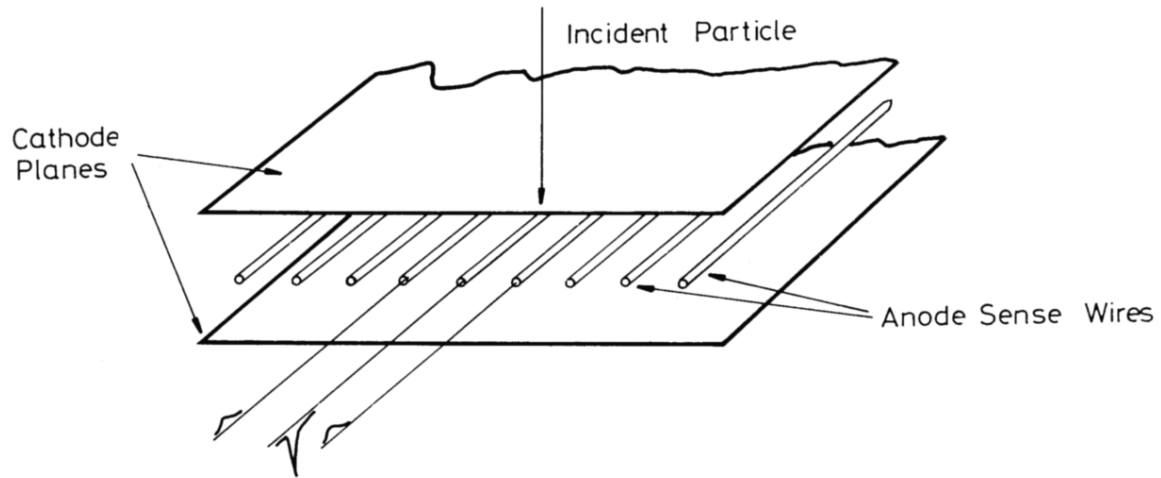
# Ionisationsdetektor



# Ionisationsdetektoren

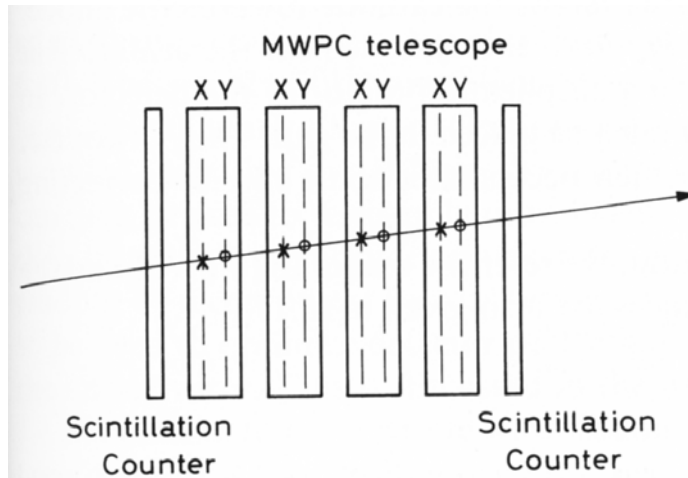
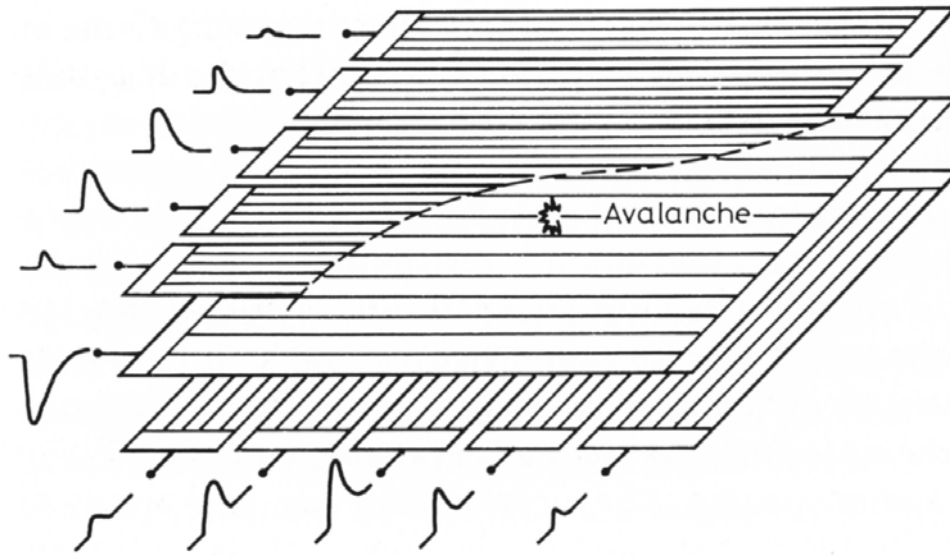


# Violdrahtkammer



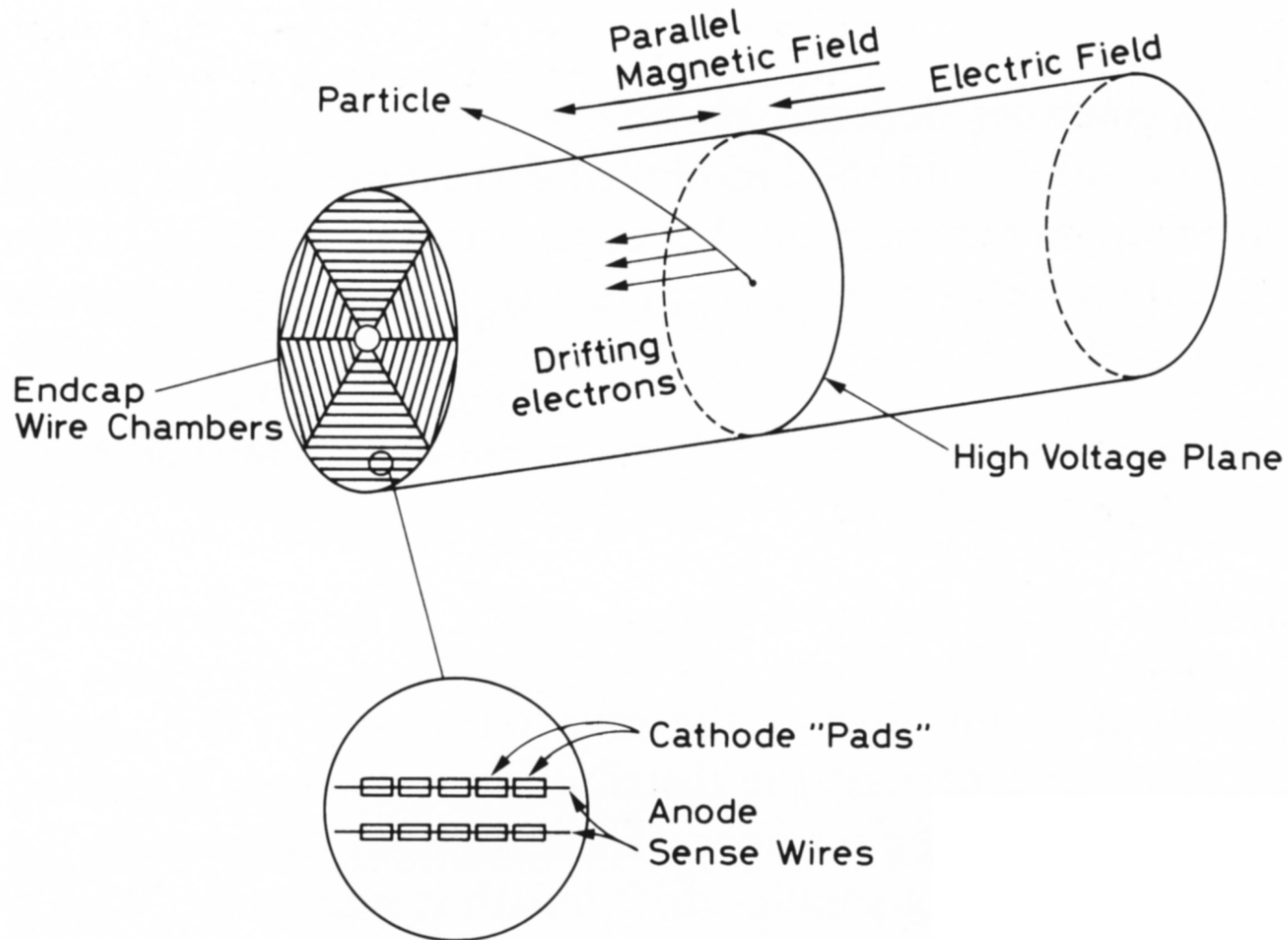


# x-y MWPC

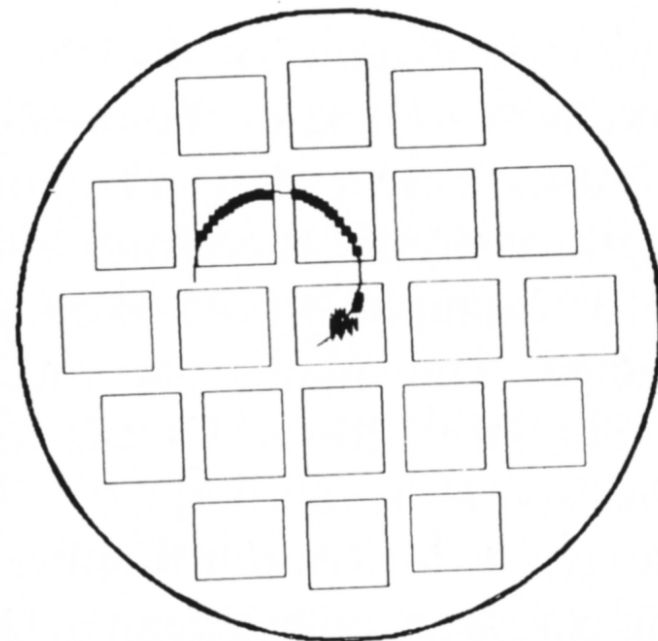
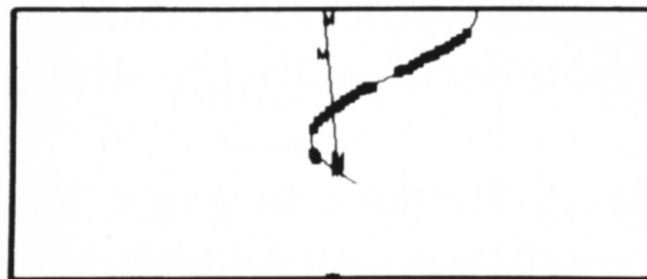
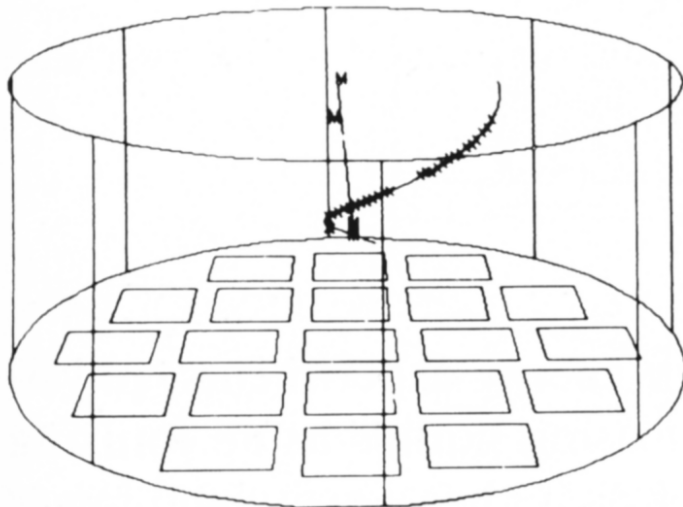




# Time Projection Chamber

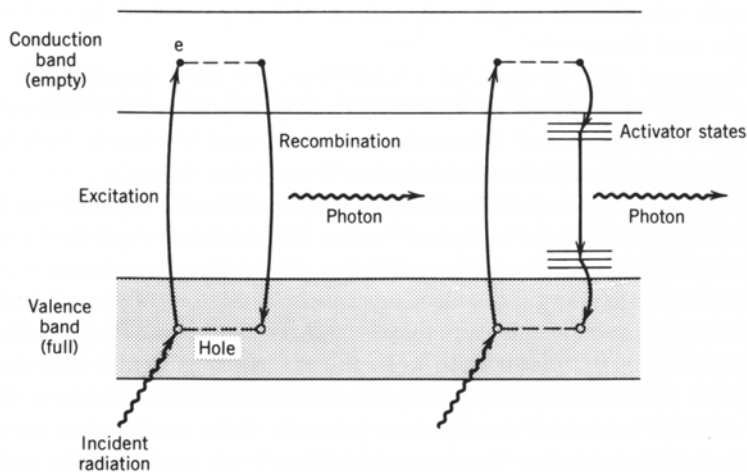
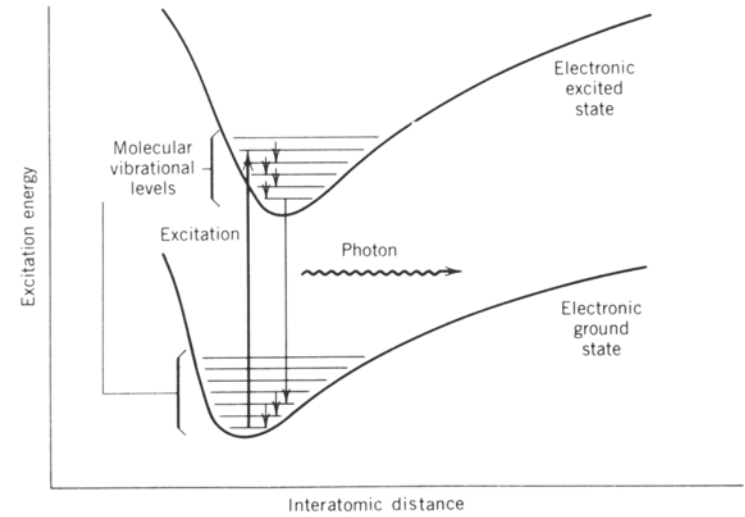


# Tracking im TPC



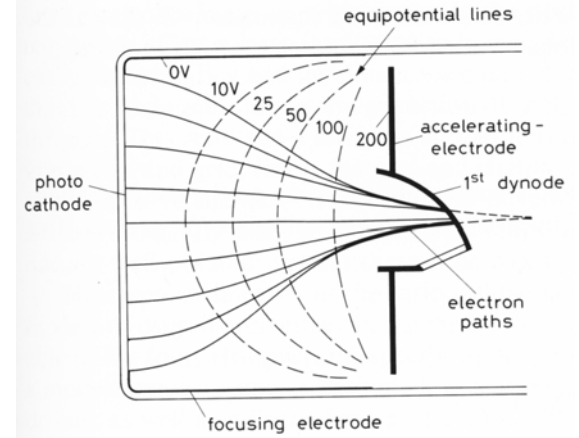
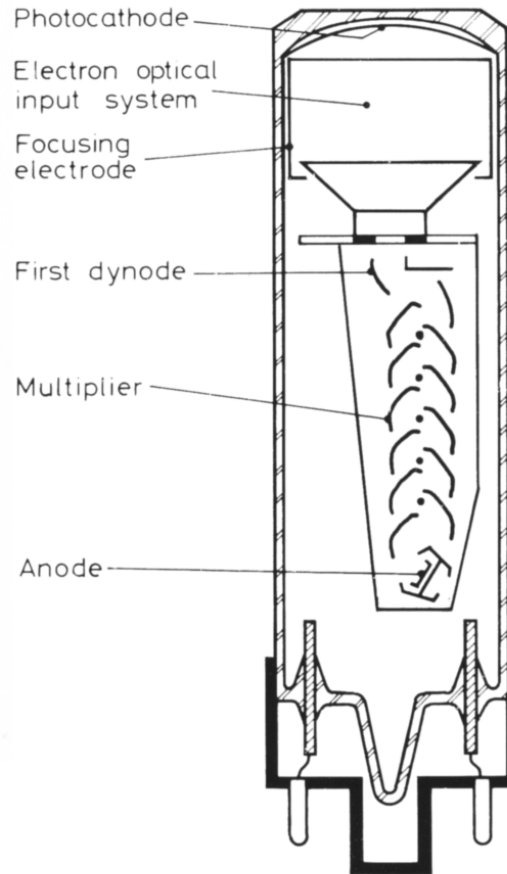
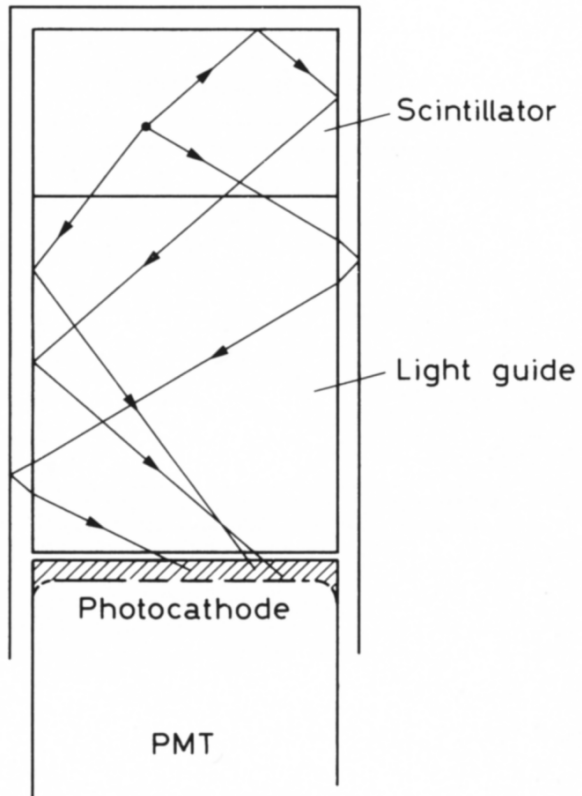
# Szintillator

organischer Szintillator



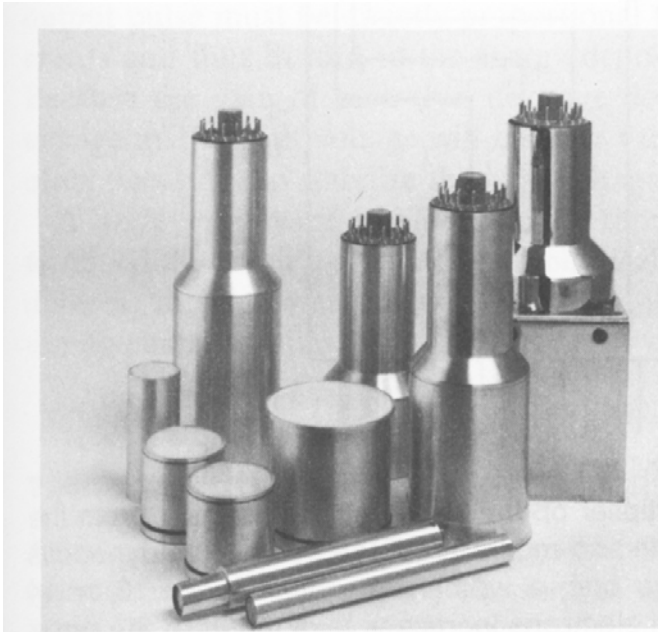
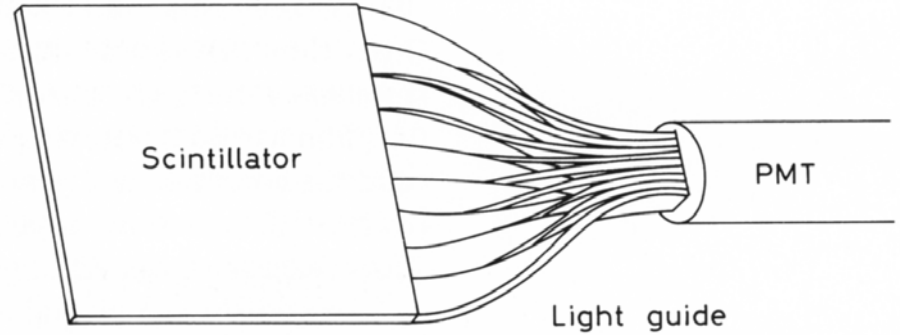
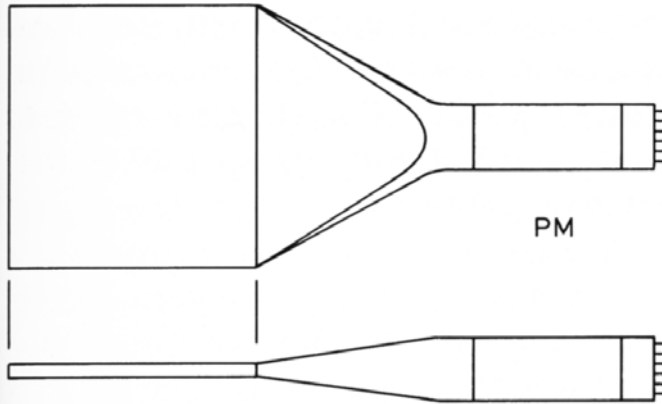
← anorganischer Szintillator

# Photomultiplier

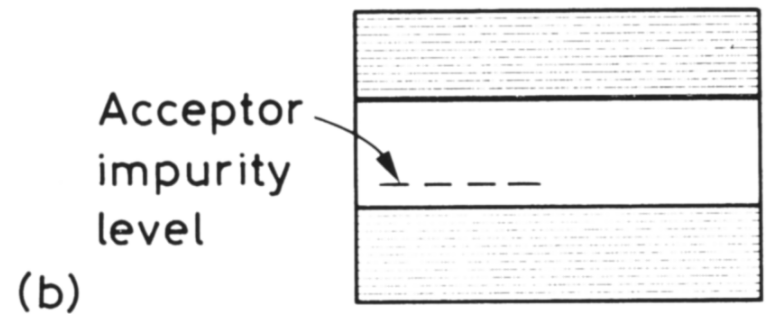
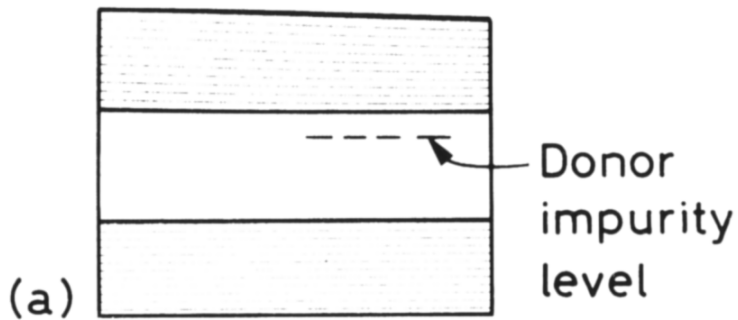
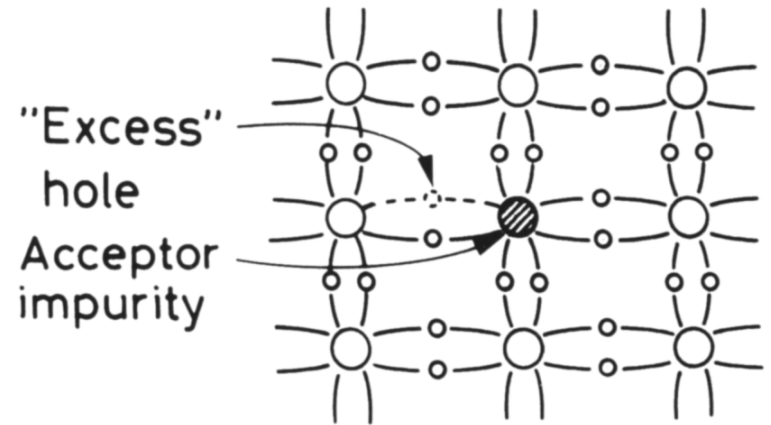
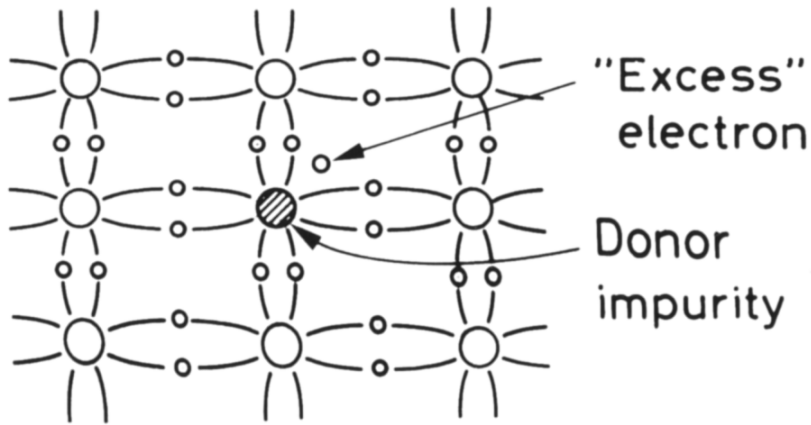


# Szintillatoren + Photomultiplier

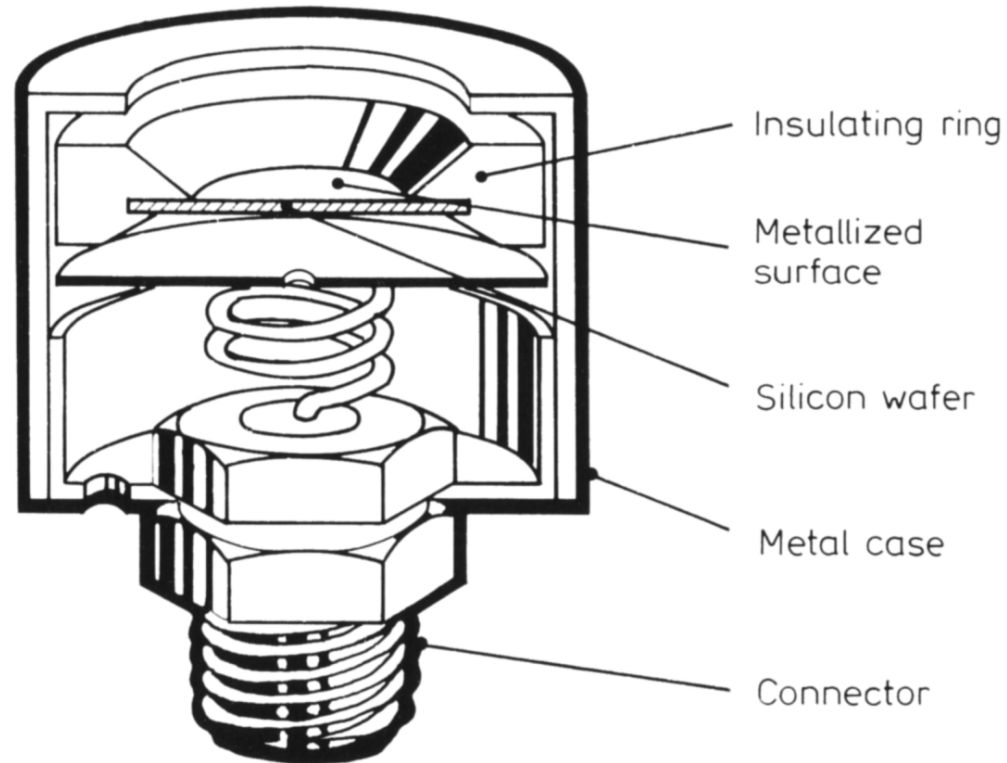
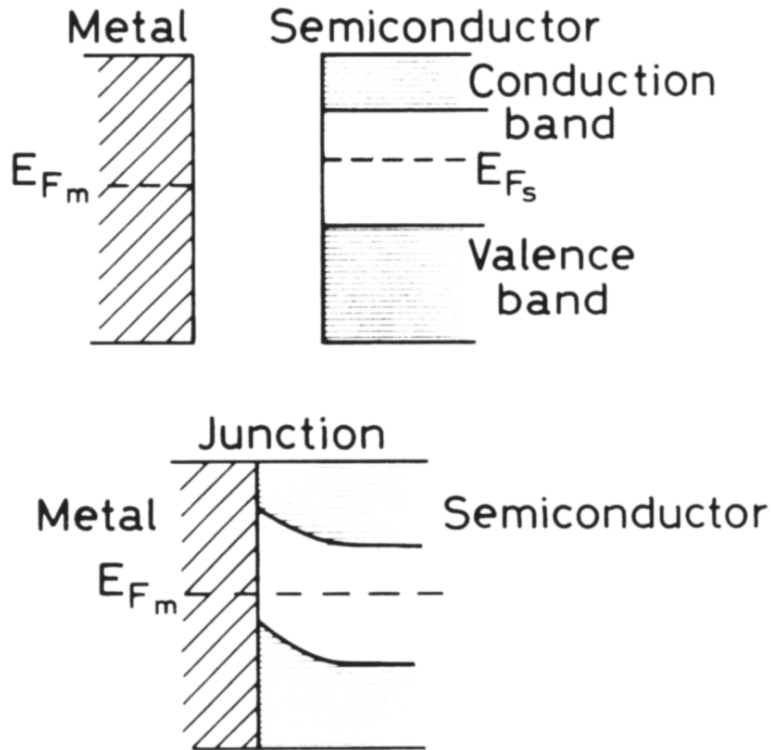
Light guide



# Dotierte Halbleiter

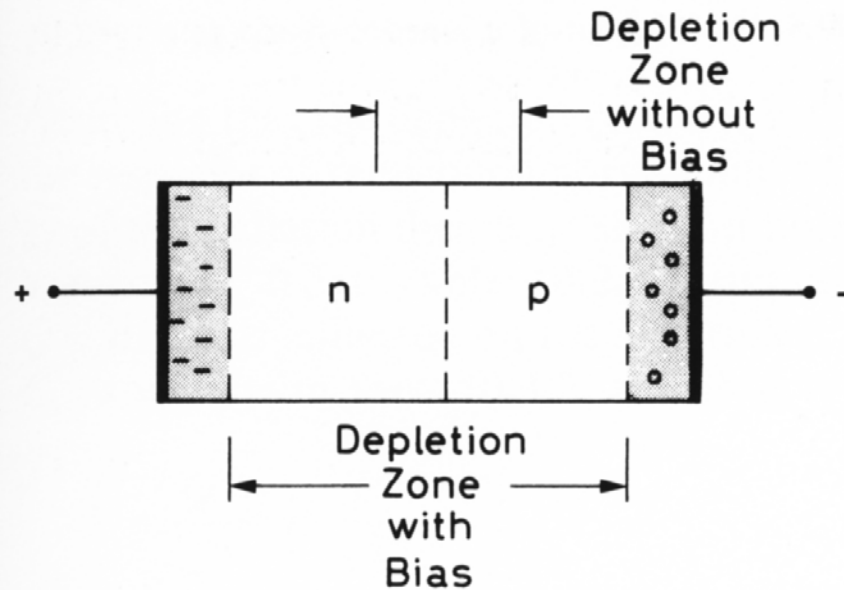
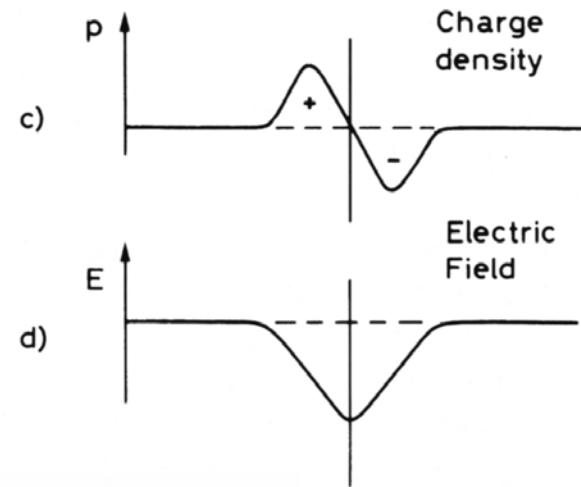
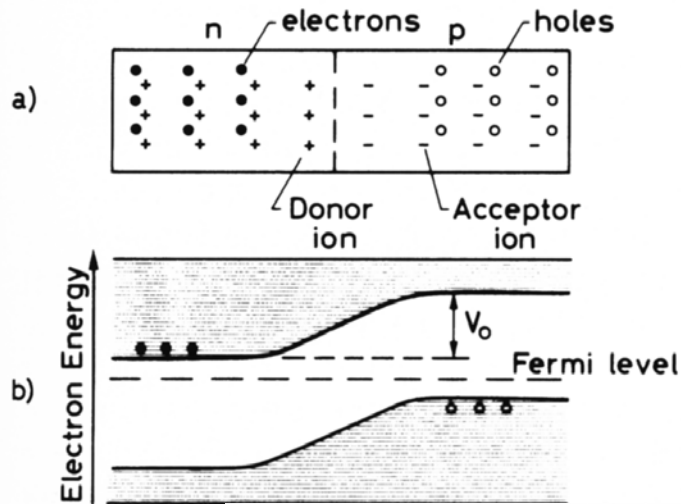


# Si - Oberflächensperrschichtzähler

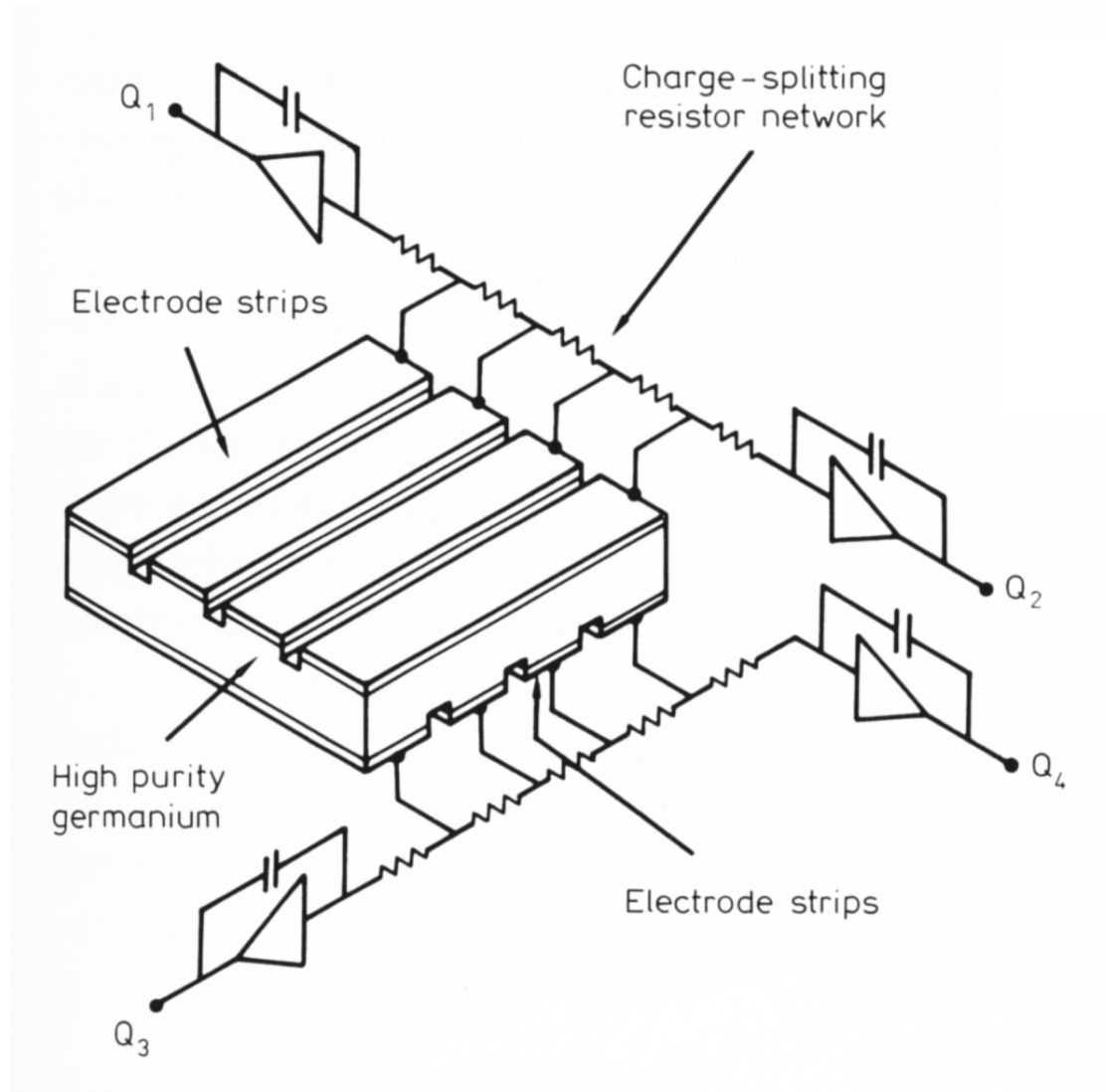




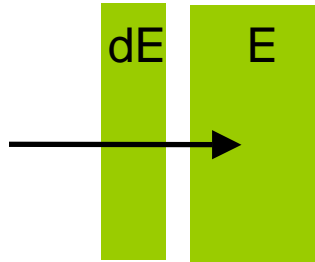
# p-n-Kontakt



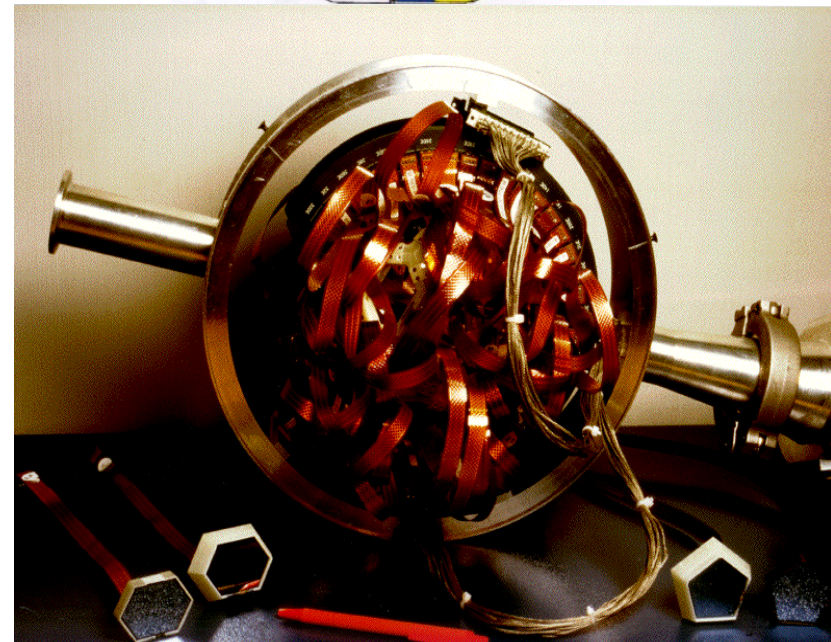
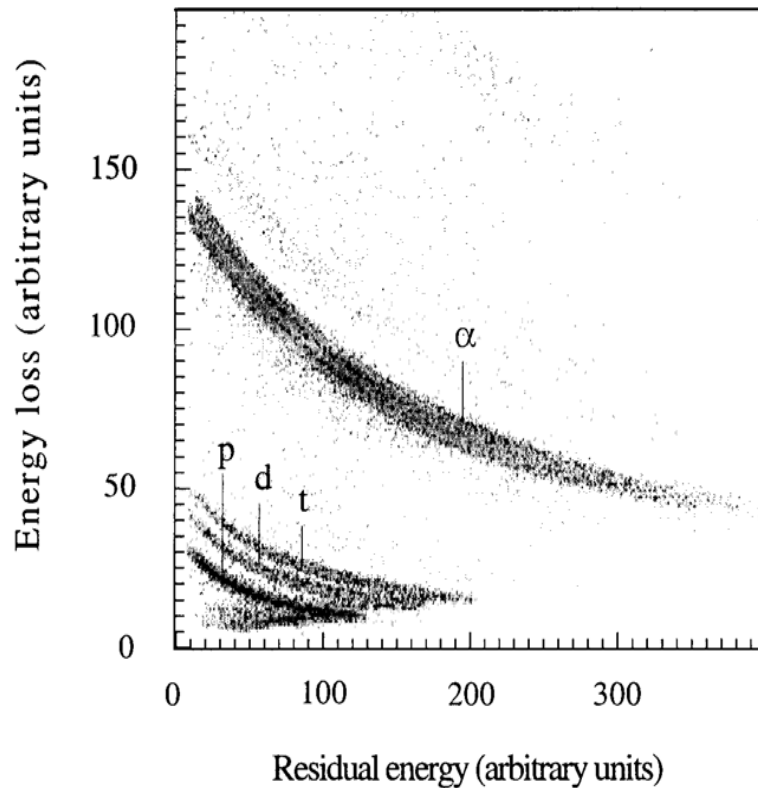
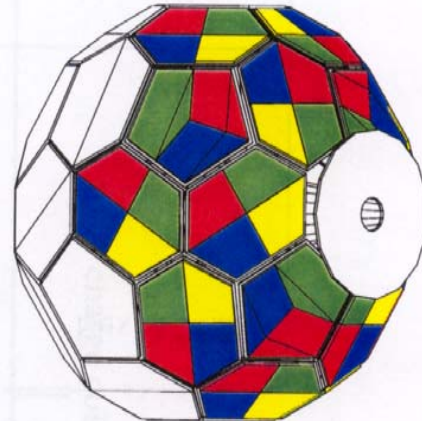
# Positionsempfindliche Halbleiterzähler



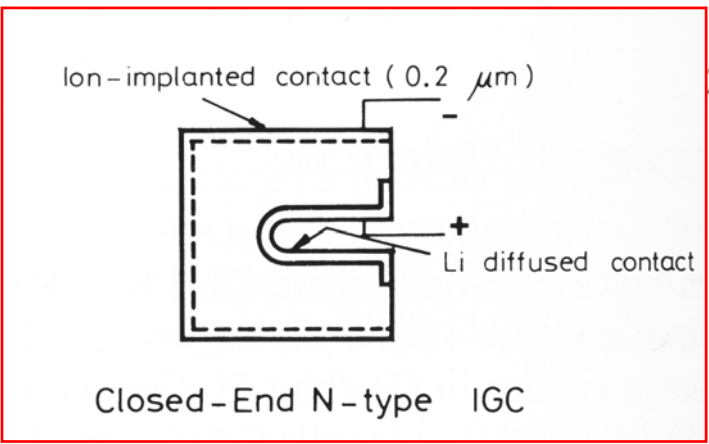
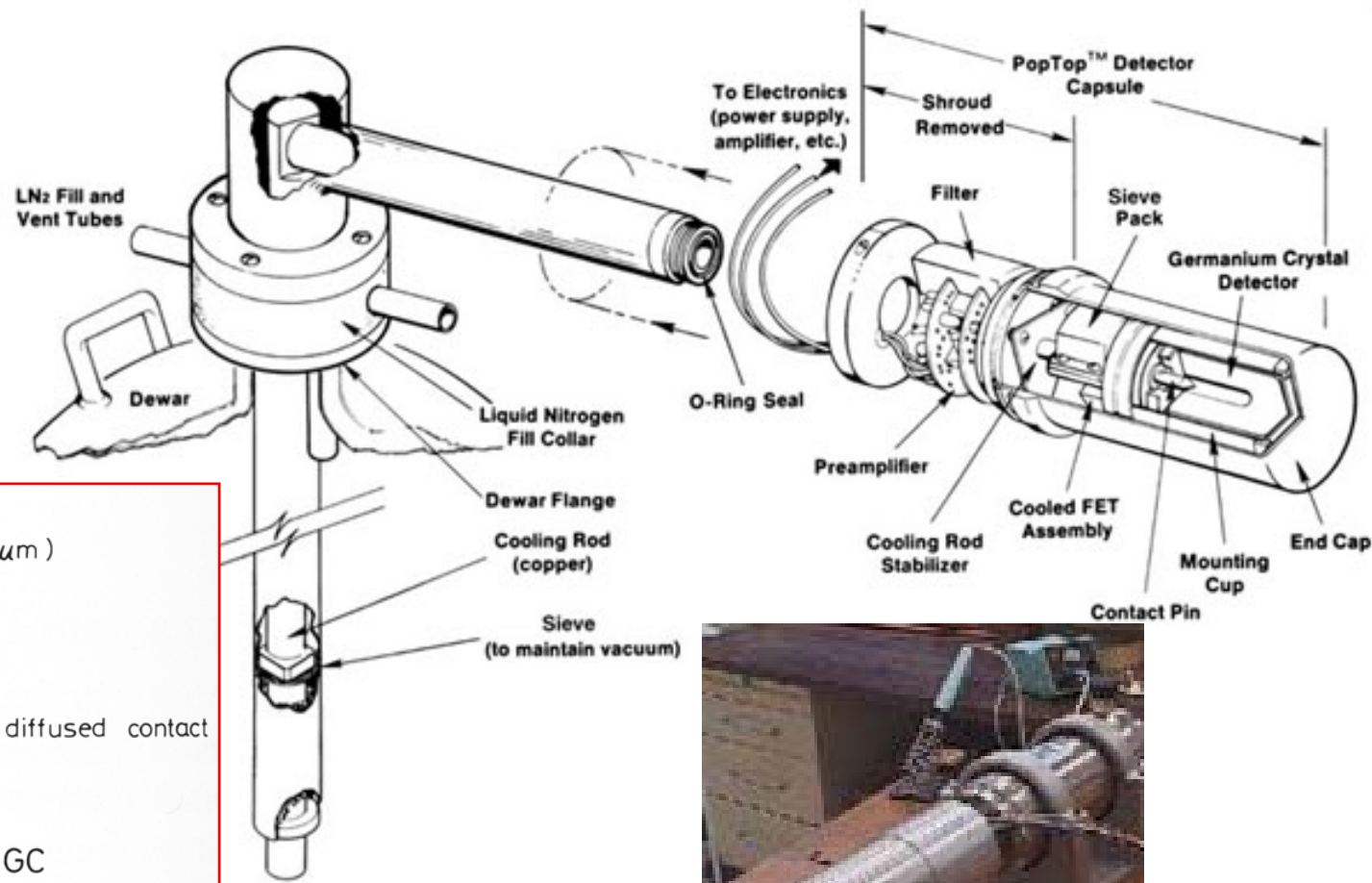
# Teilchenidentifikation mit $dE/dx$



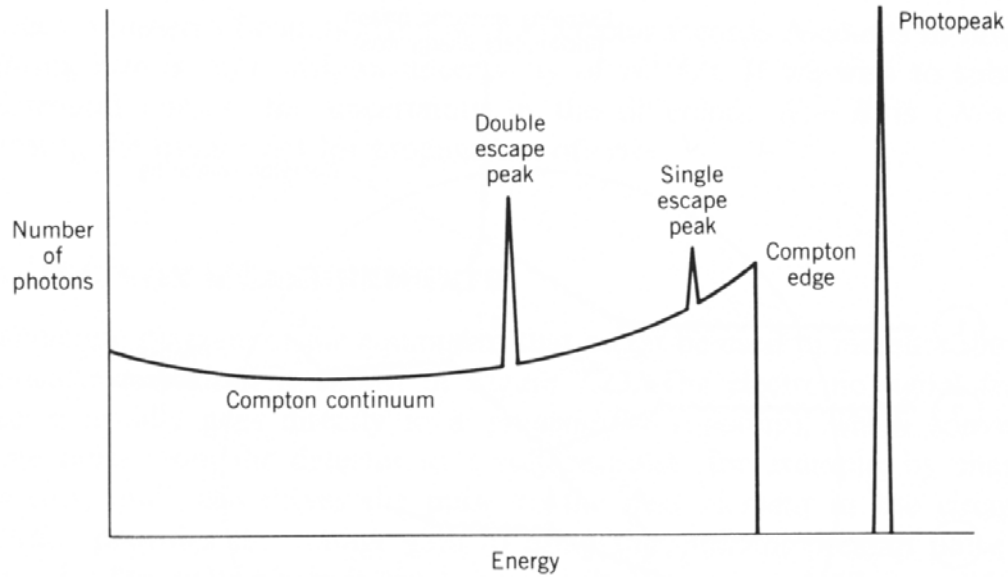
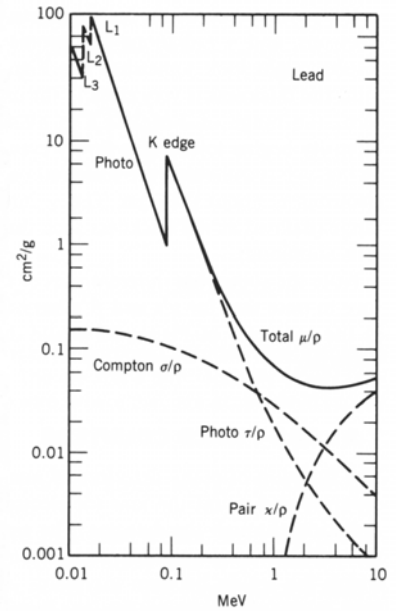
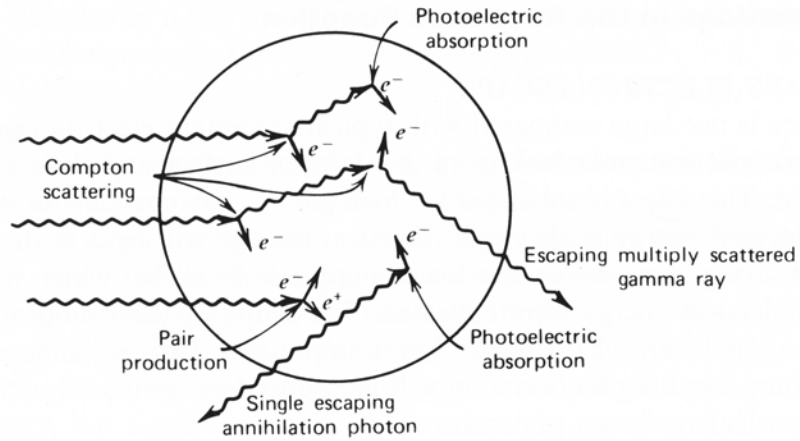
$$\frac{dE}{dx} \propto \frac{mZ^2}{E}$$



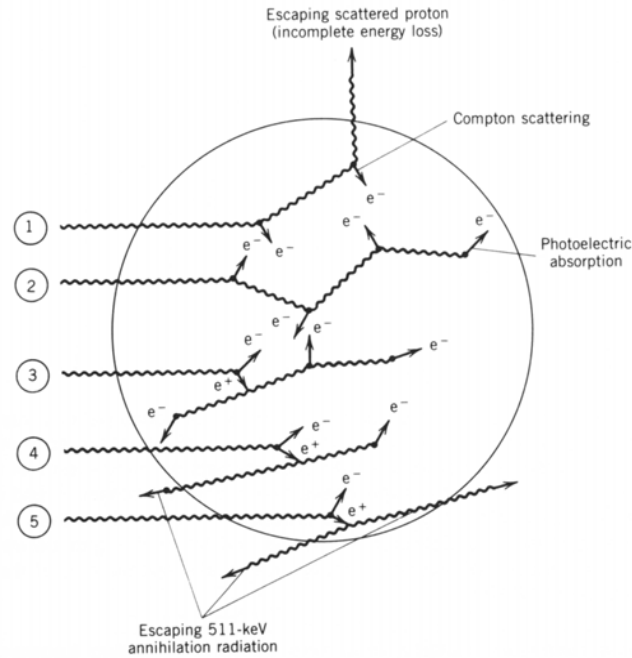
# Germaniumdetektoren für Gammas



# Gamma-Spektren 1

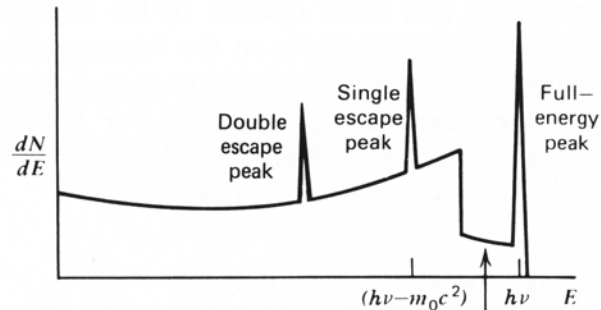
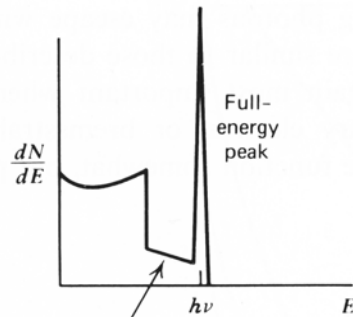


# Gamma-Spektren 2



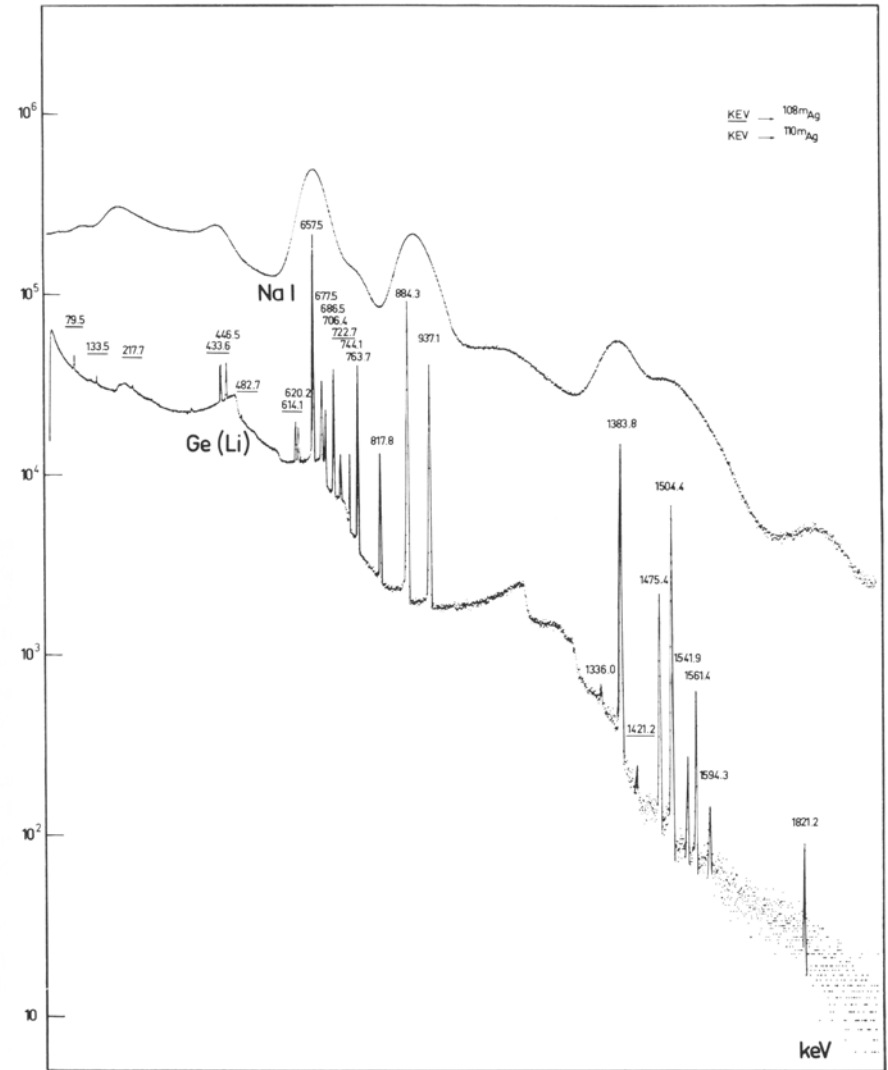
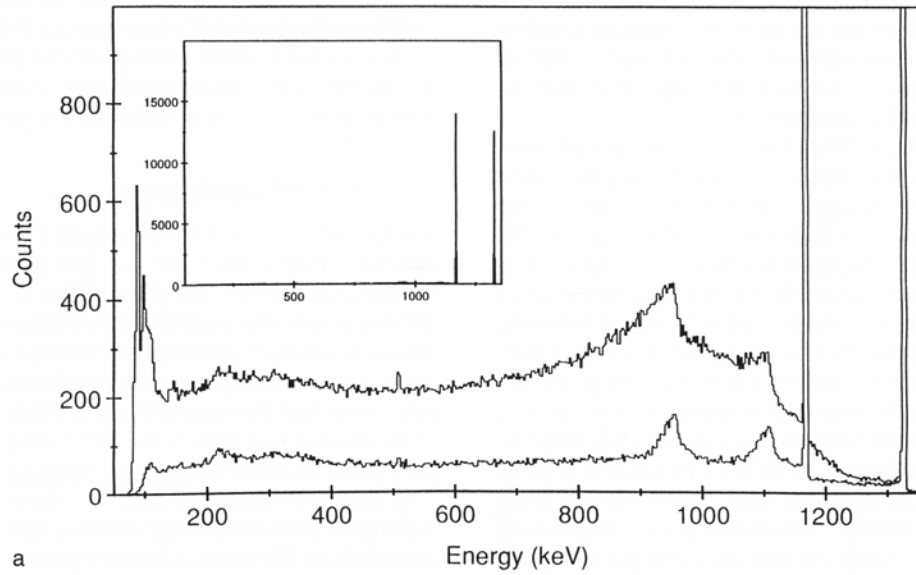
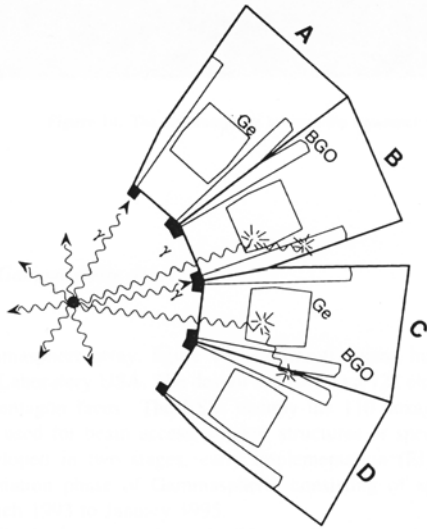
$$h\nu < 2m_0c^2$$

$$h\nu \gg 2m_0c^2$$





# Gamma-Spektren

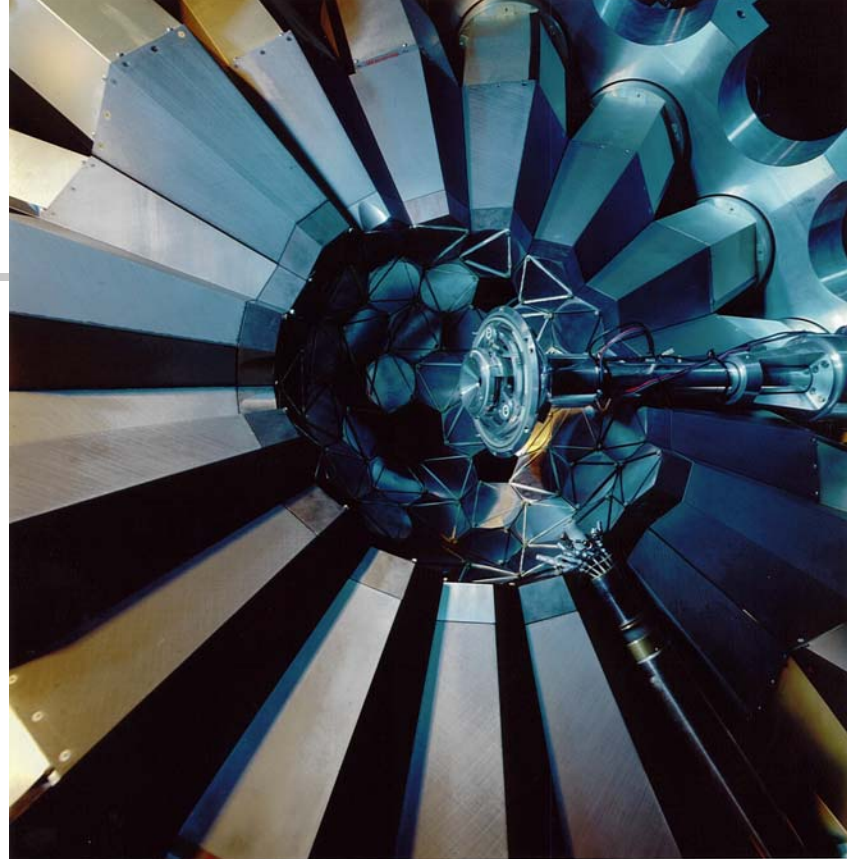
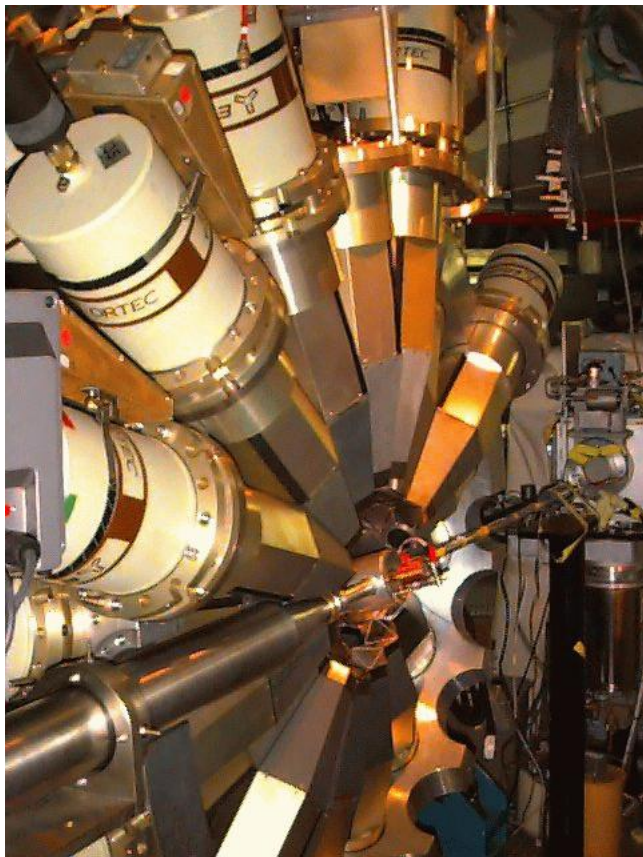




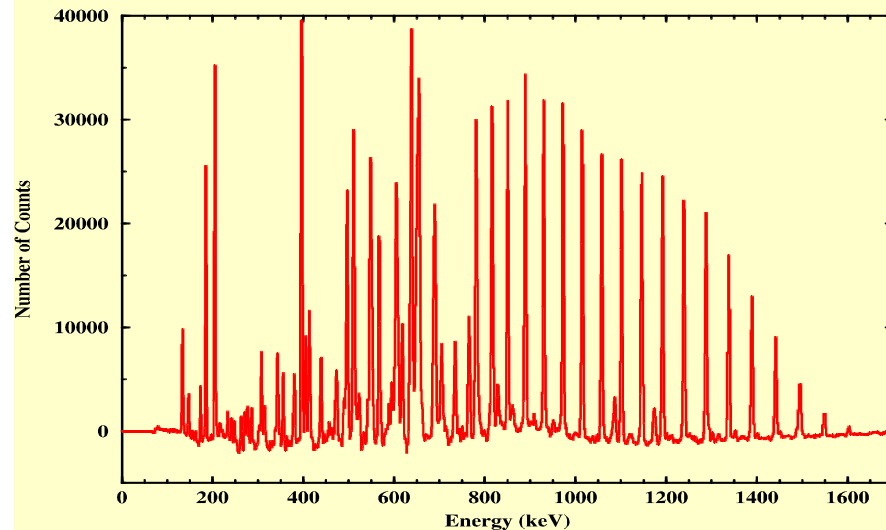
# Schema moderner Gammaskpektrometer



# GammaSphere

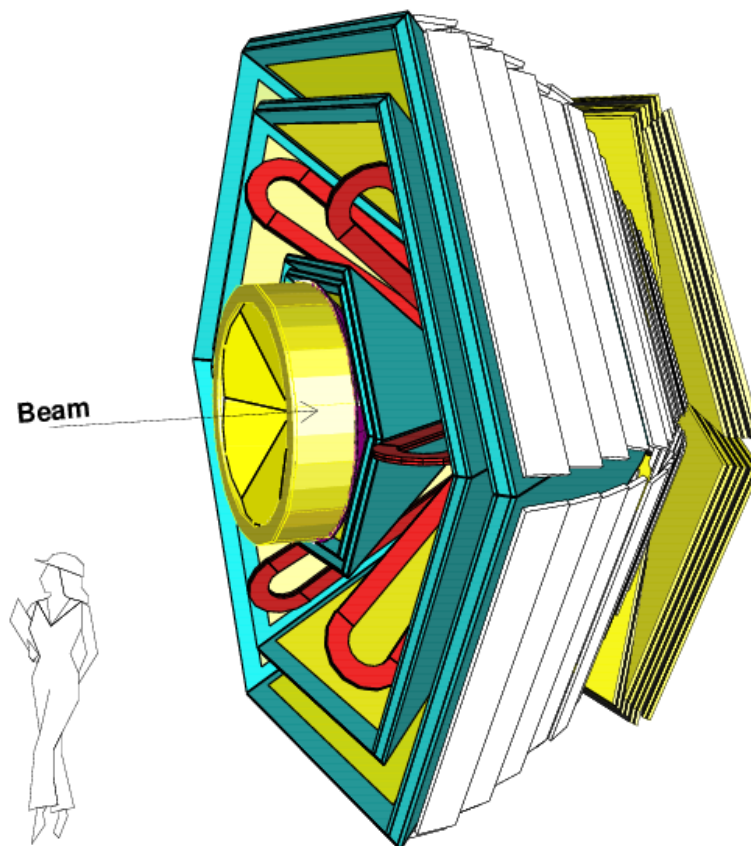
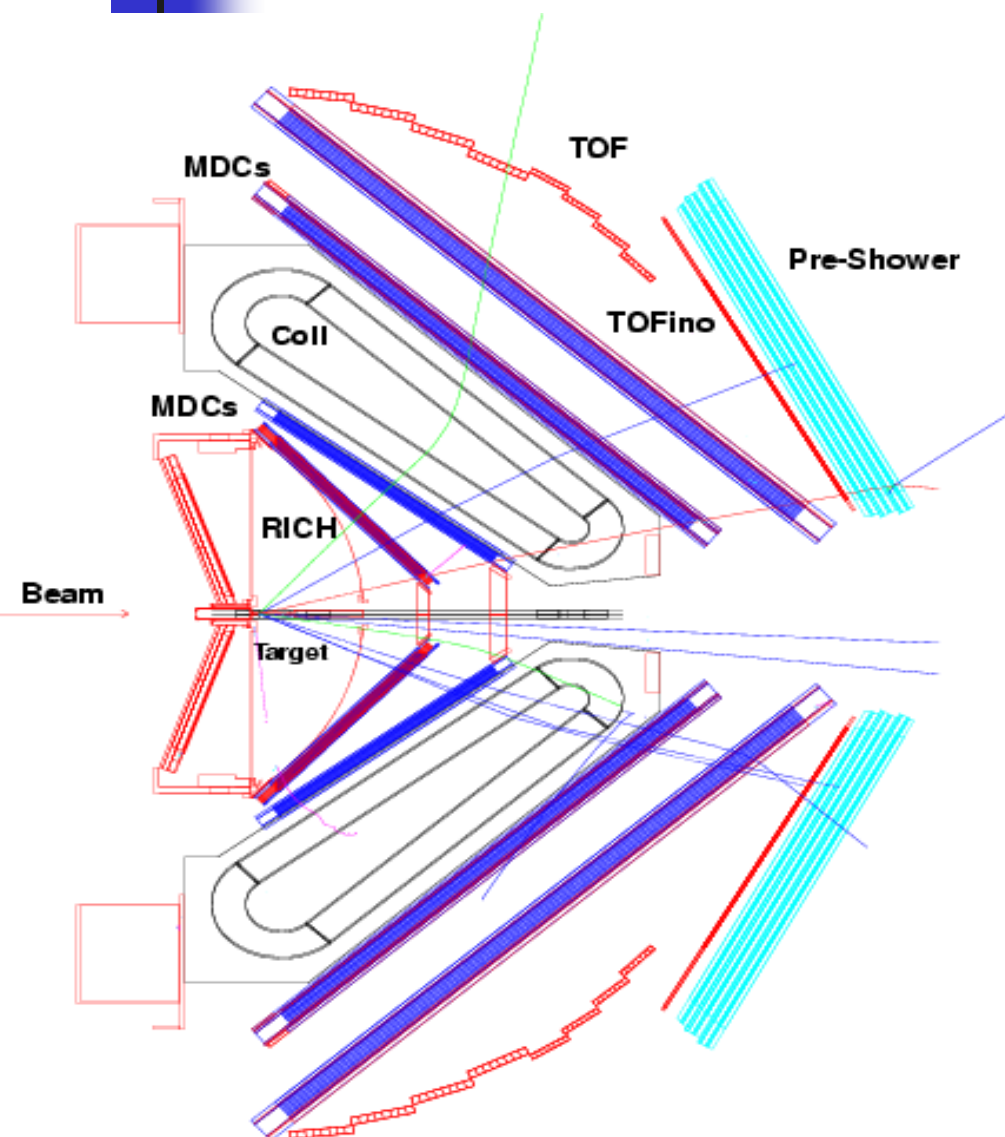
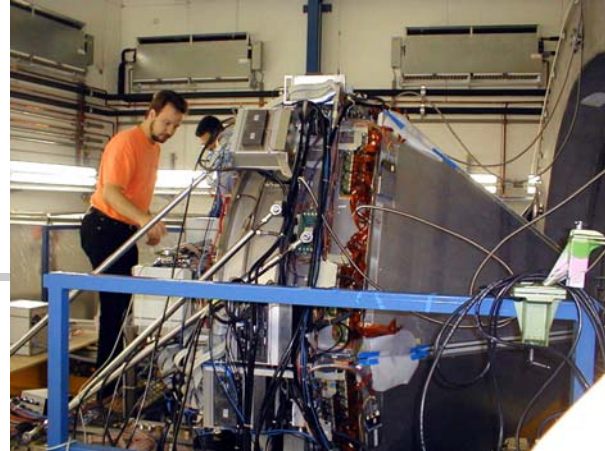


Gamma-ray from SD and ND 150Gd

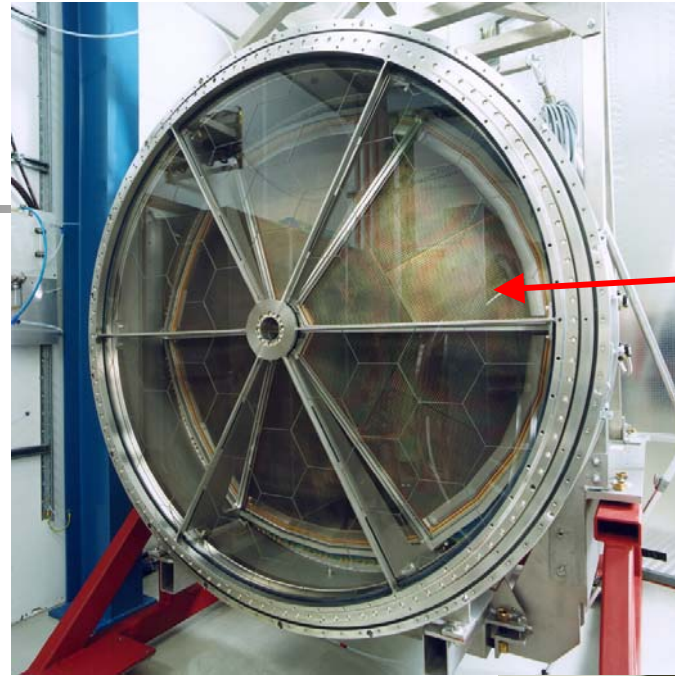
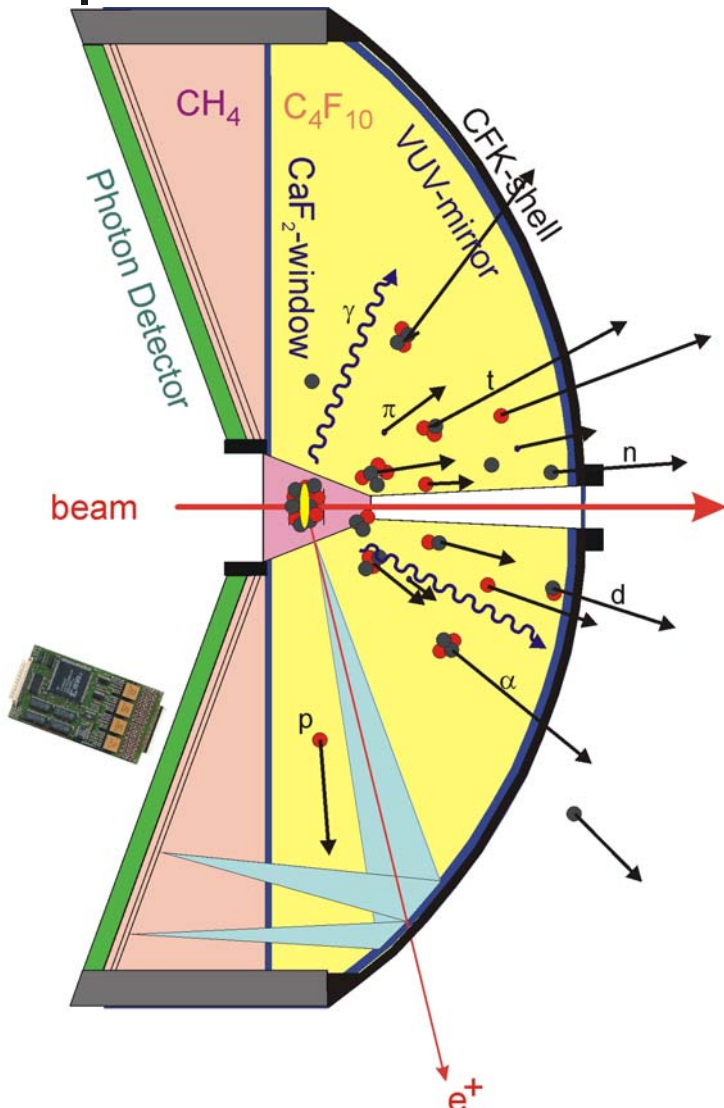




# HADES an der GSI

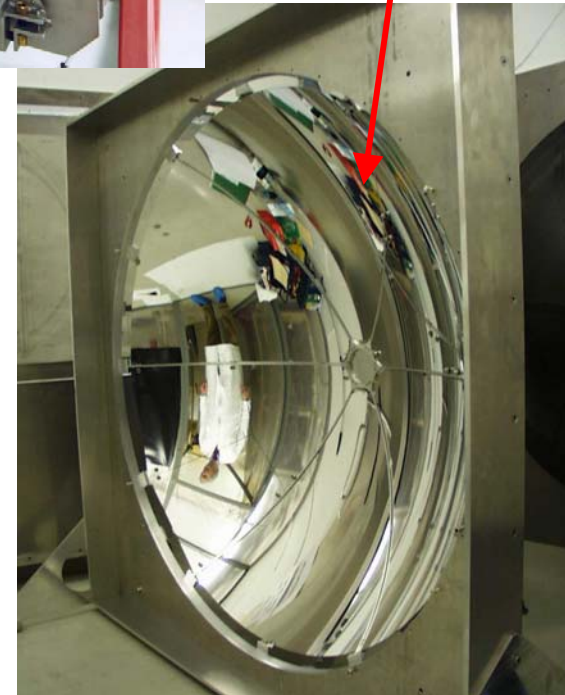


# HADES RICH



CaF<sub>2</sub> Fenster

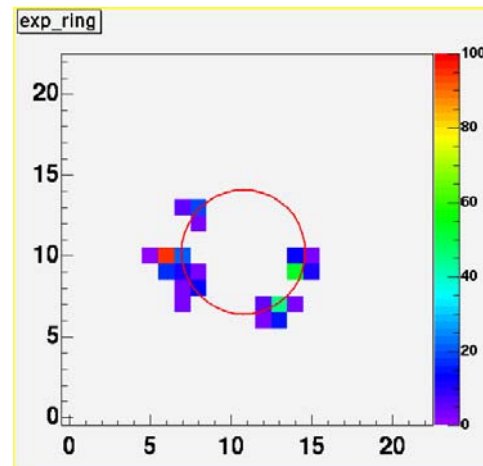
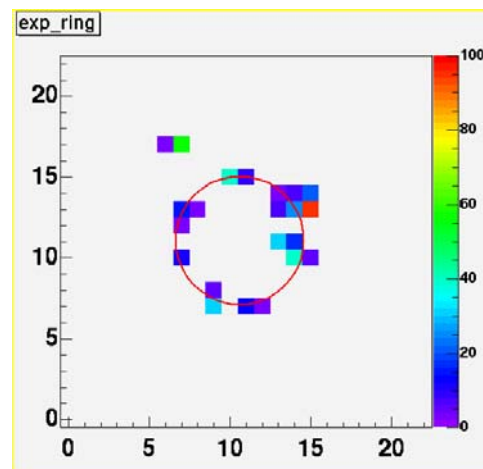
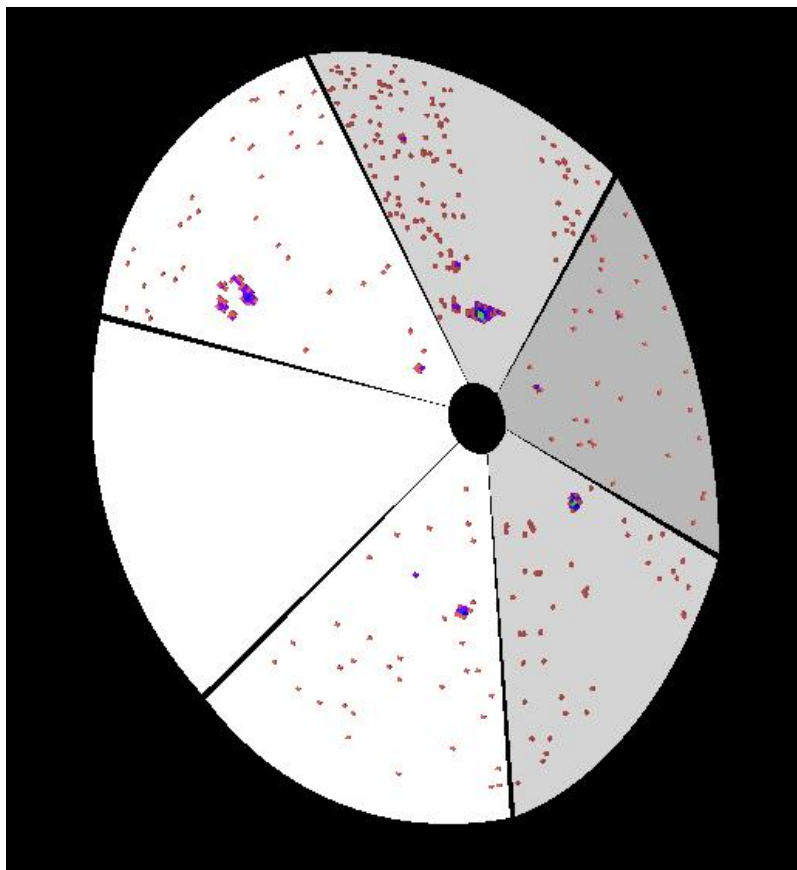
VUV Spiegel



Photon Detector :

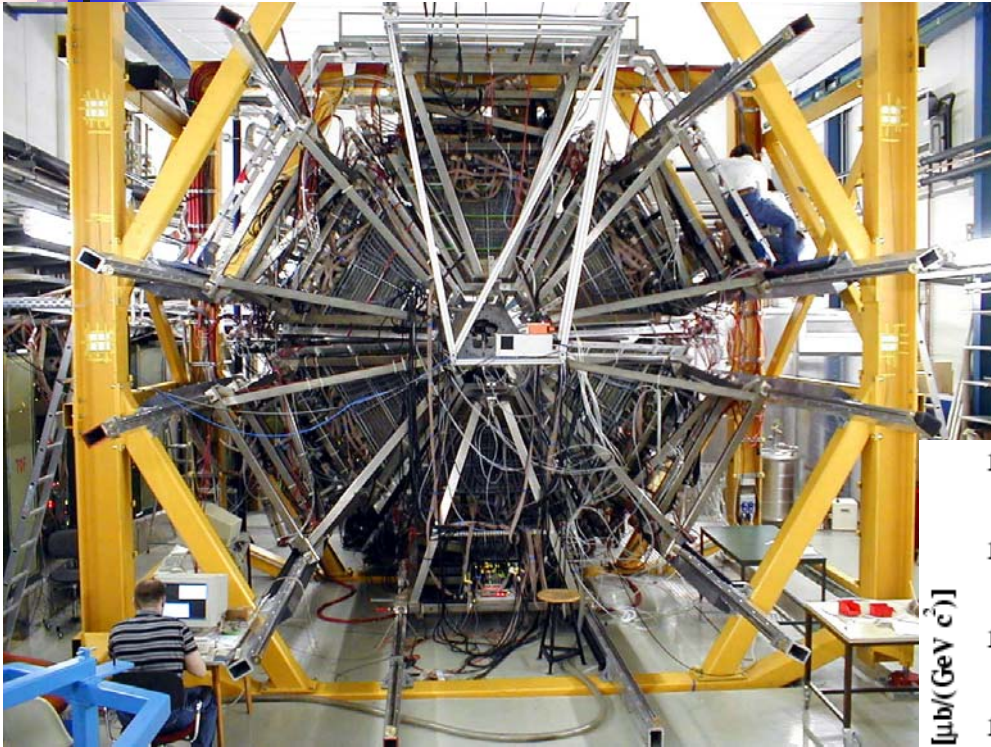
- CH<sub>4</sub> MWPC
- CsI Kathode
- 28.600 Pads
- 10  $\mu$ s Ereignisrate

# HADES-RICH Ereignis

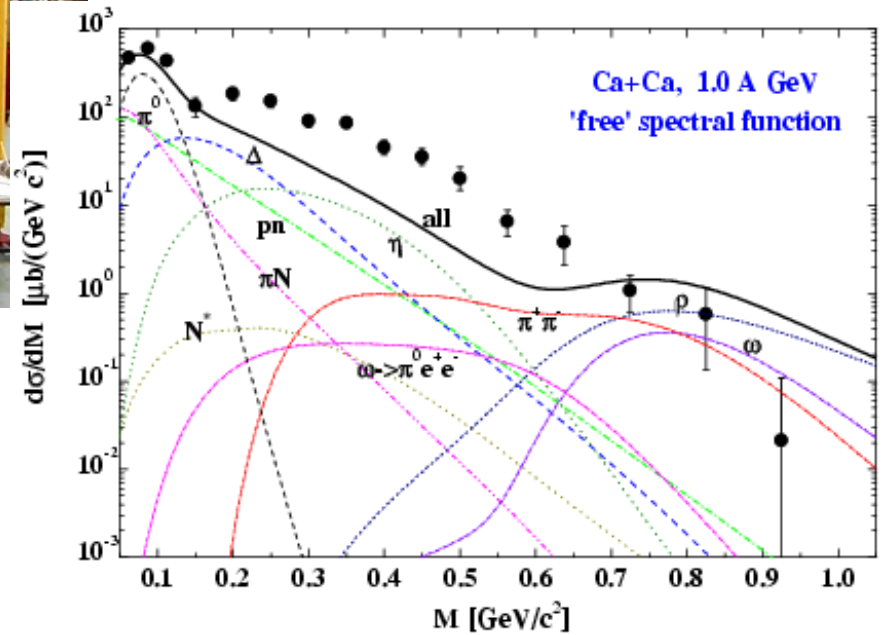




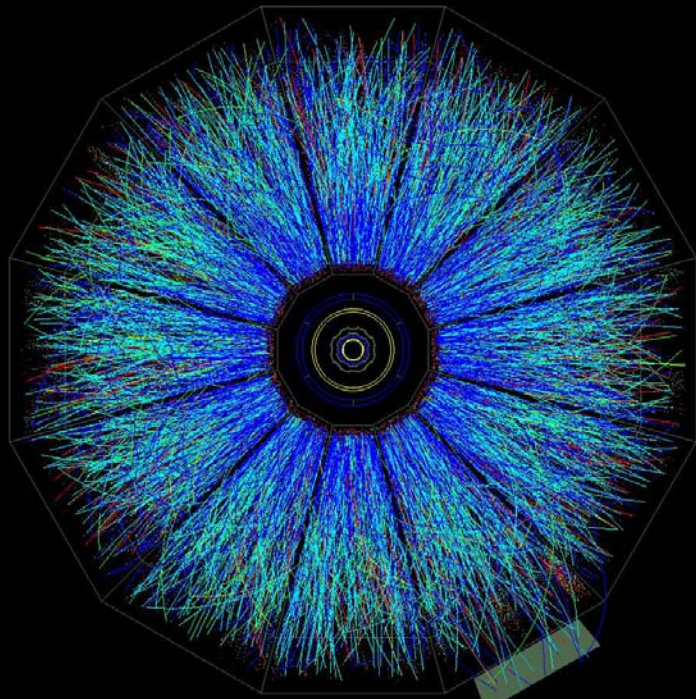
# HADES



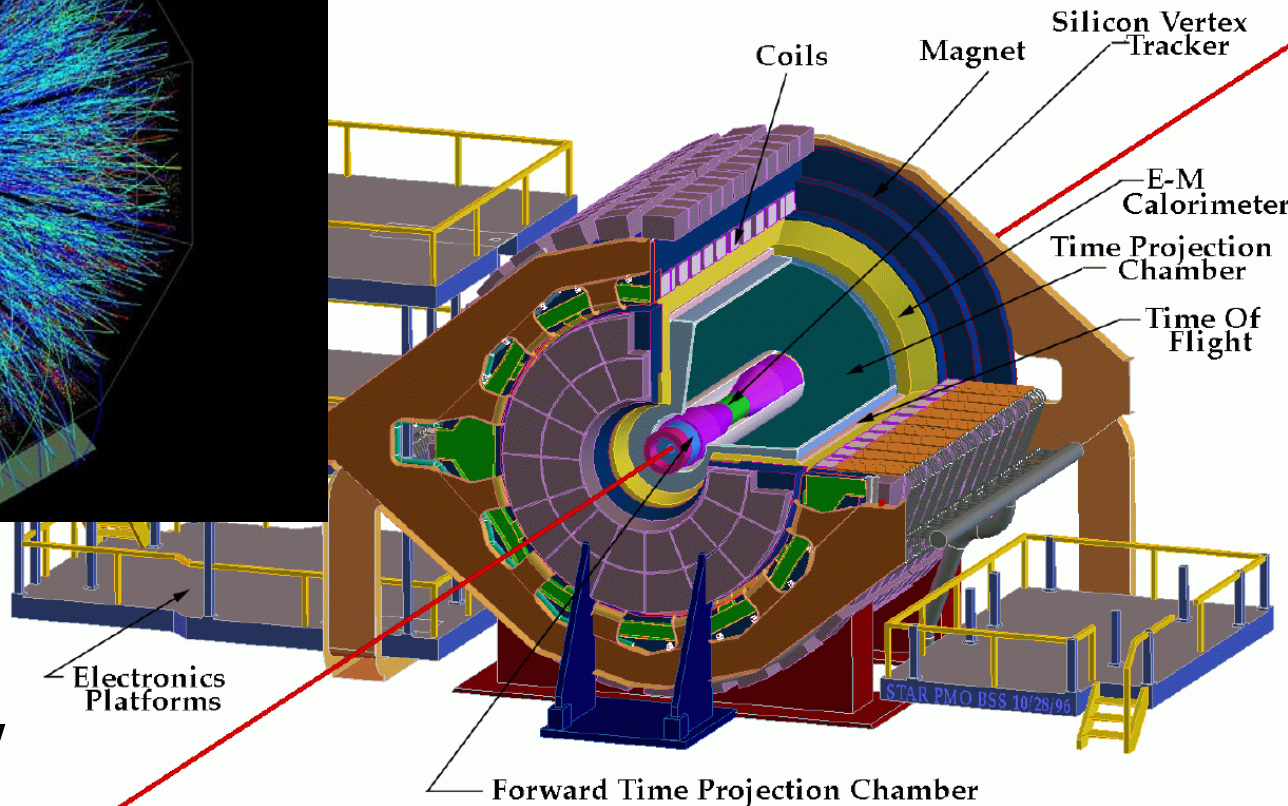
## Massenspektrum



# STAR am RHIC (Quark-Gluon Plasma)



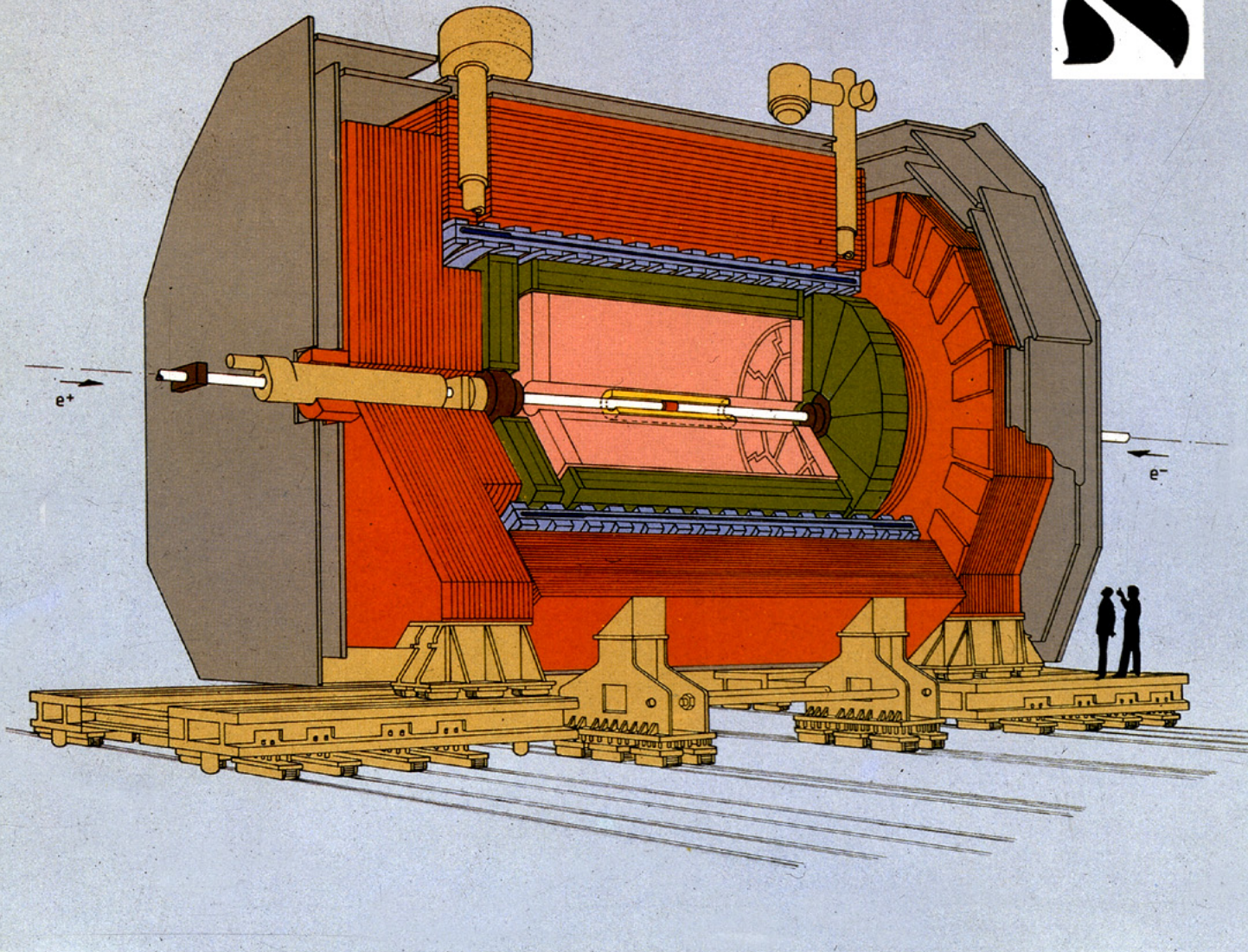
## STAR Detector



Au+Au bei 100 A GeV



# Entdeckung des $Z^0$ Bosons











-  Vertex Detector
-  Inner Track Chamber
-  Time Projection Chamber
-  Electromagnetic Calorimeter
-  Superconducting Magnet Coil
-  Hadron Calorimeter
-  Muon Detection Chambers
-  Luminosity Monitors

Fig. 1 - The ALEPH Detector



