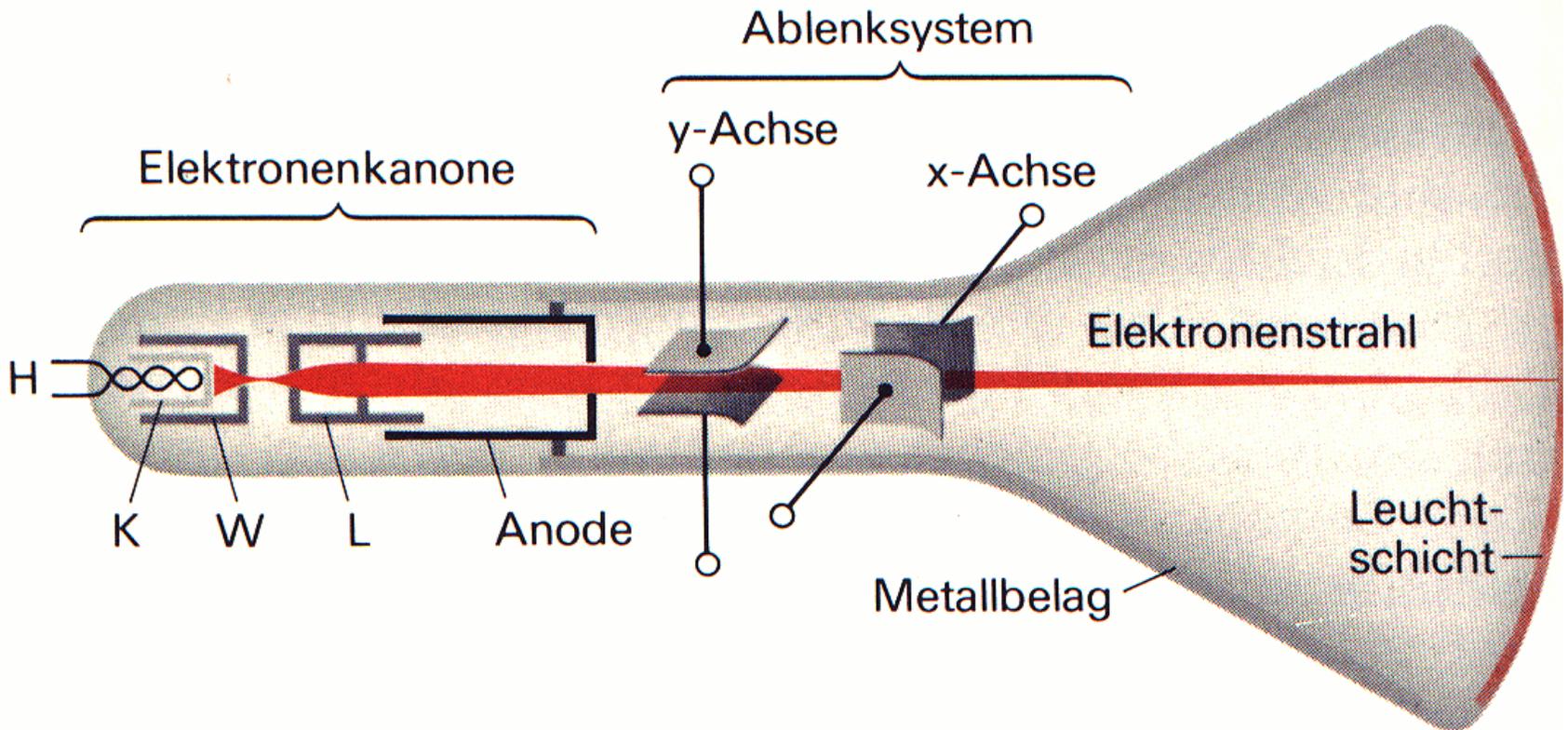


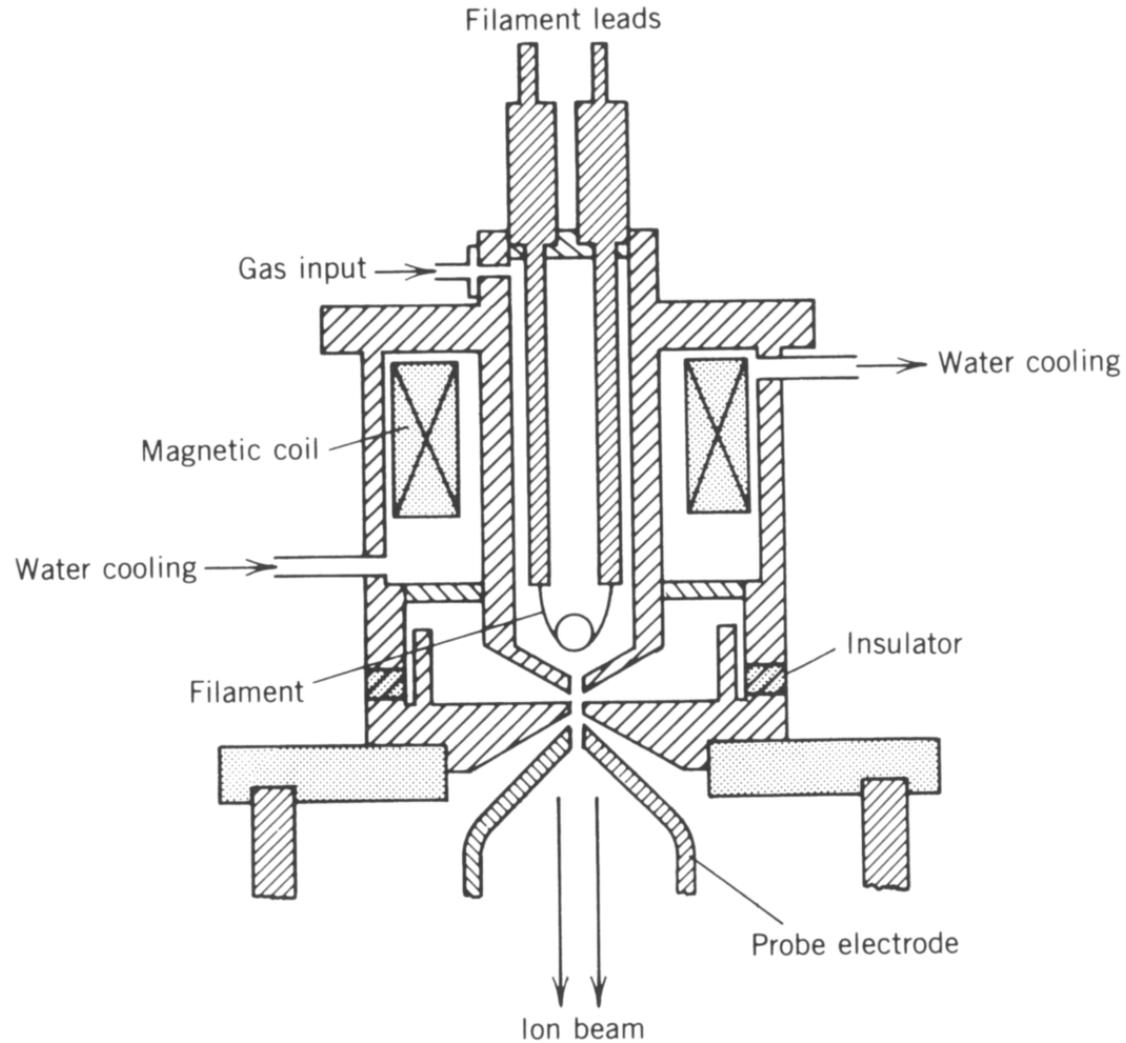
# Teilchenbeschleuniger

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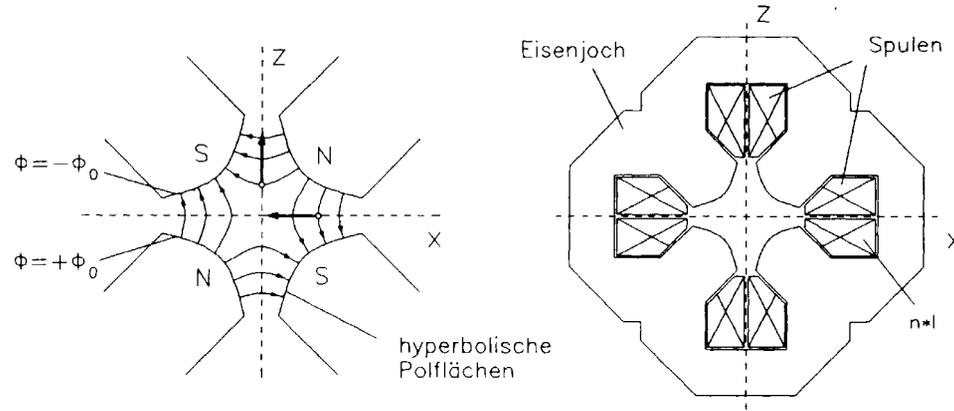
# Fernseher / Oszilloskop



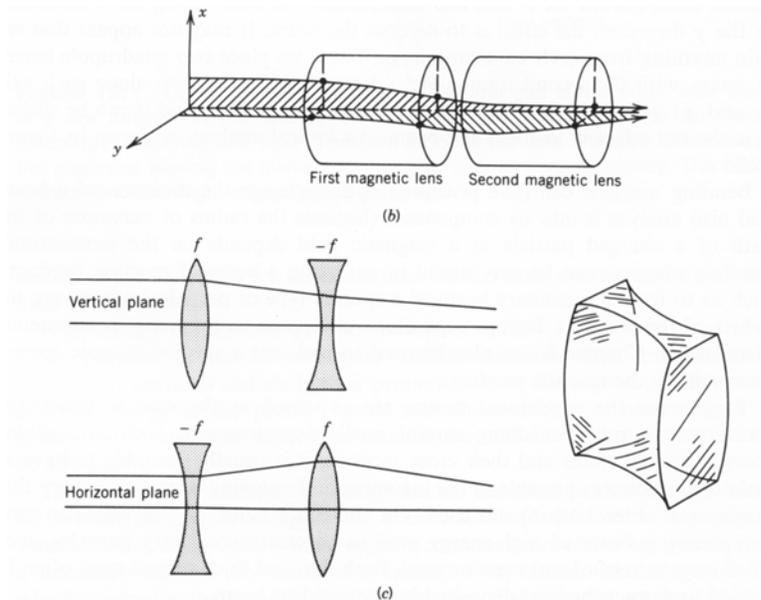
# Ionenquelle



# Quadrupol Magnet

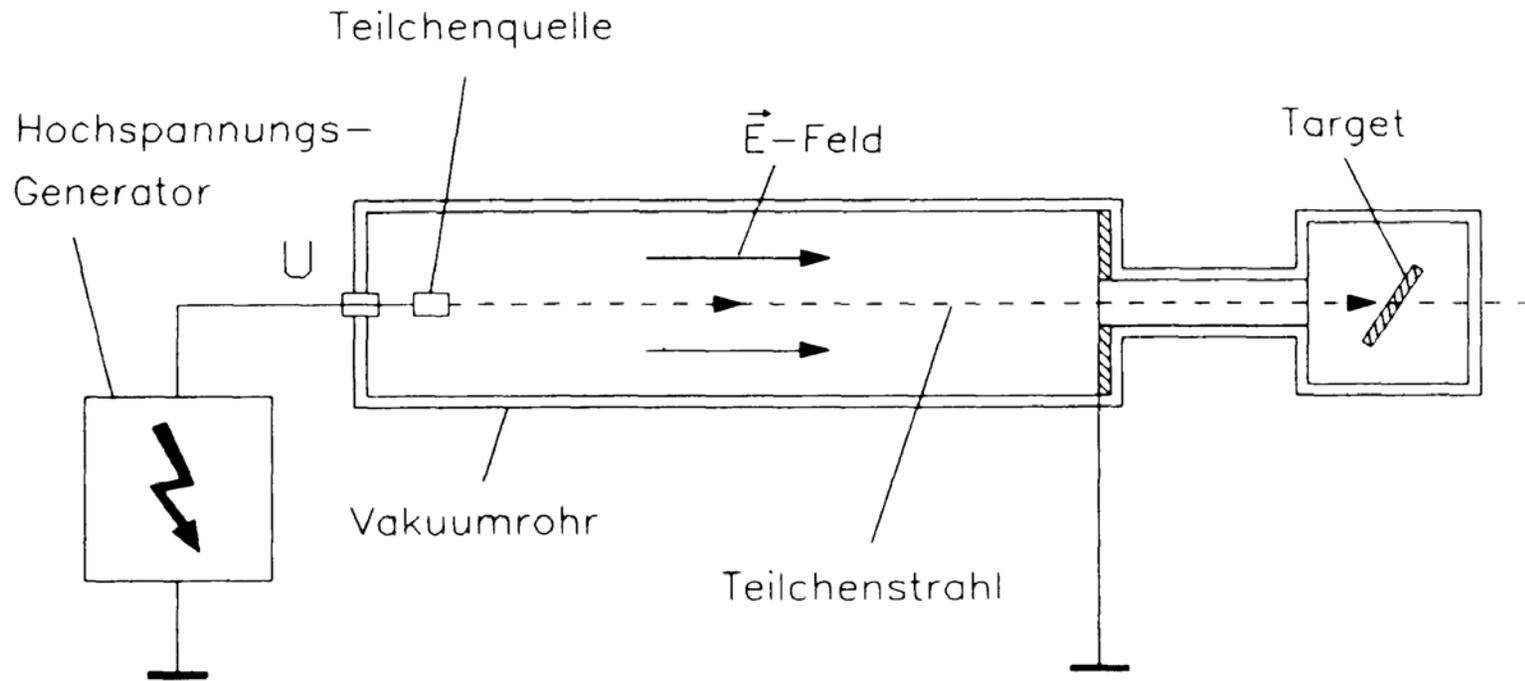


aus Wille

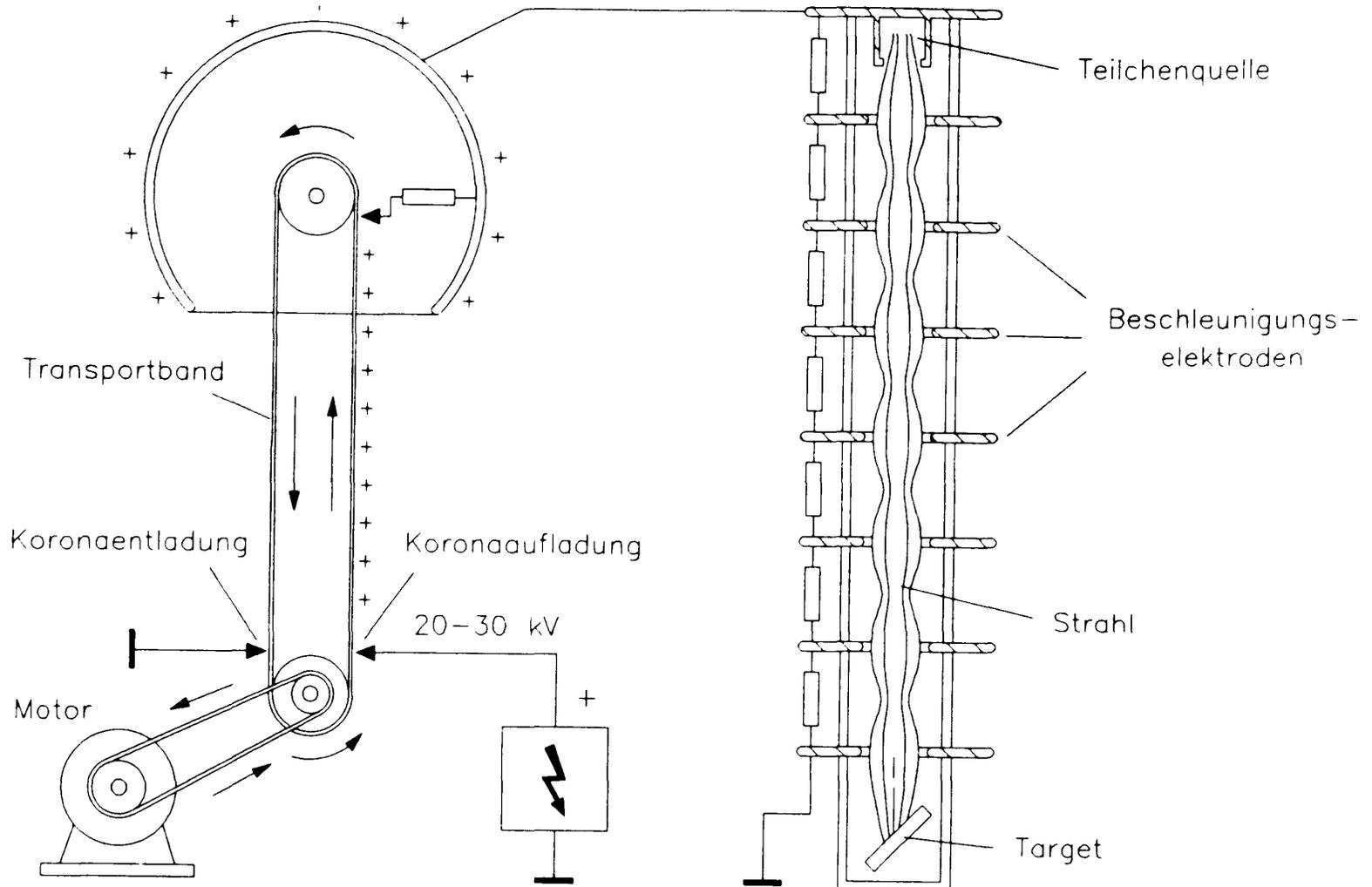


aus Krane

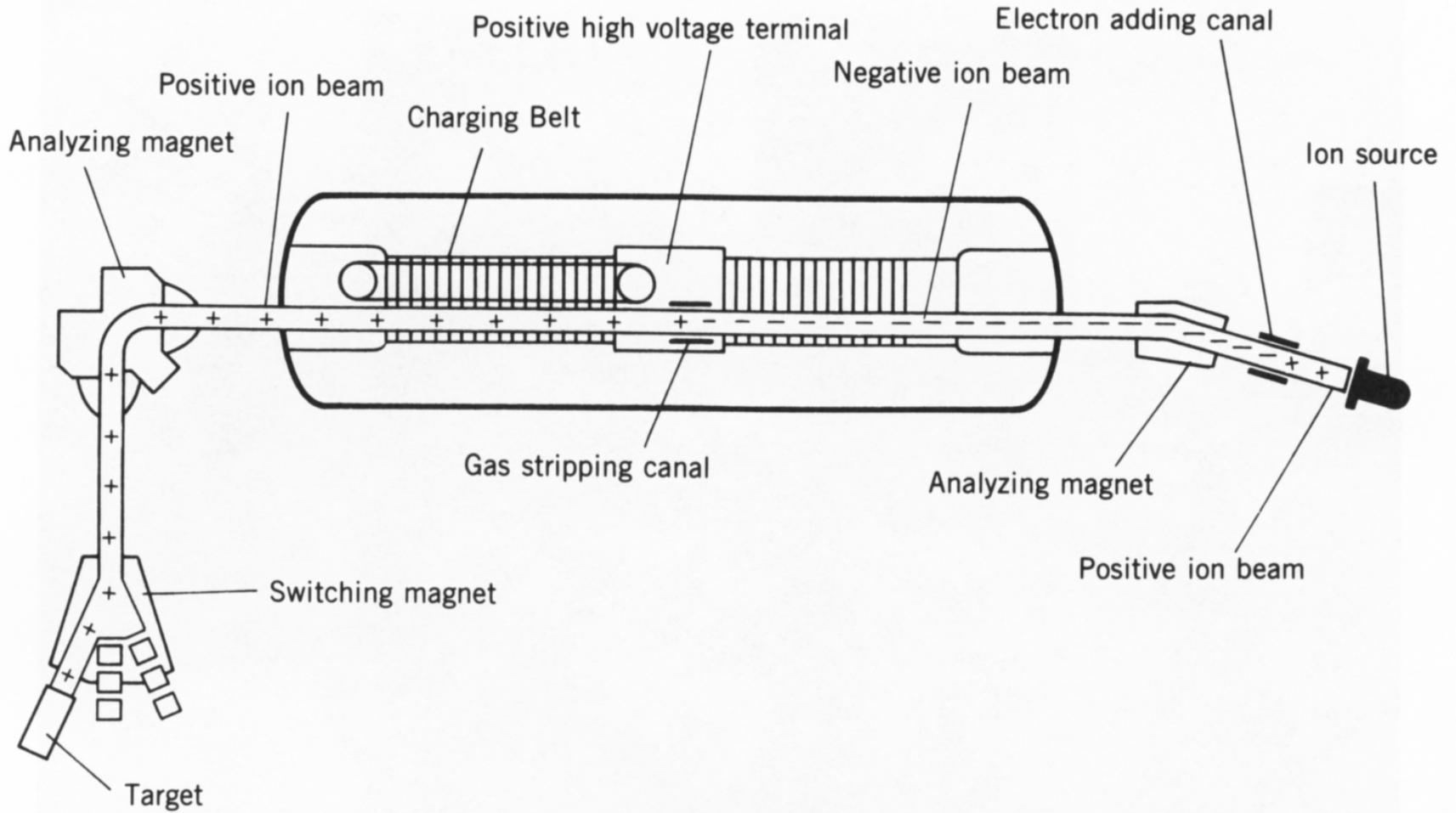
# Elektrostatischer Beschleuniger



# Van de Graaff Beschleuniger



# Tandembeschleuniger



# Münchener 15 MV Tandem



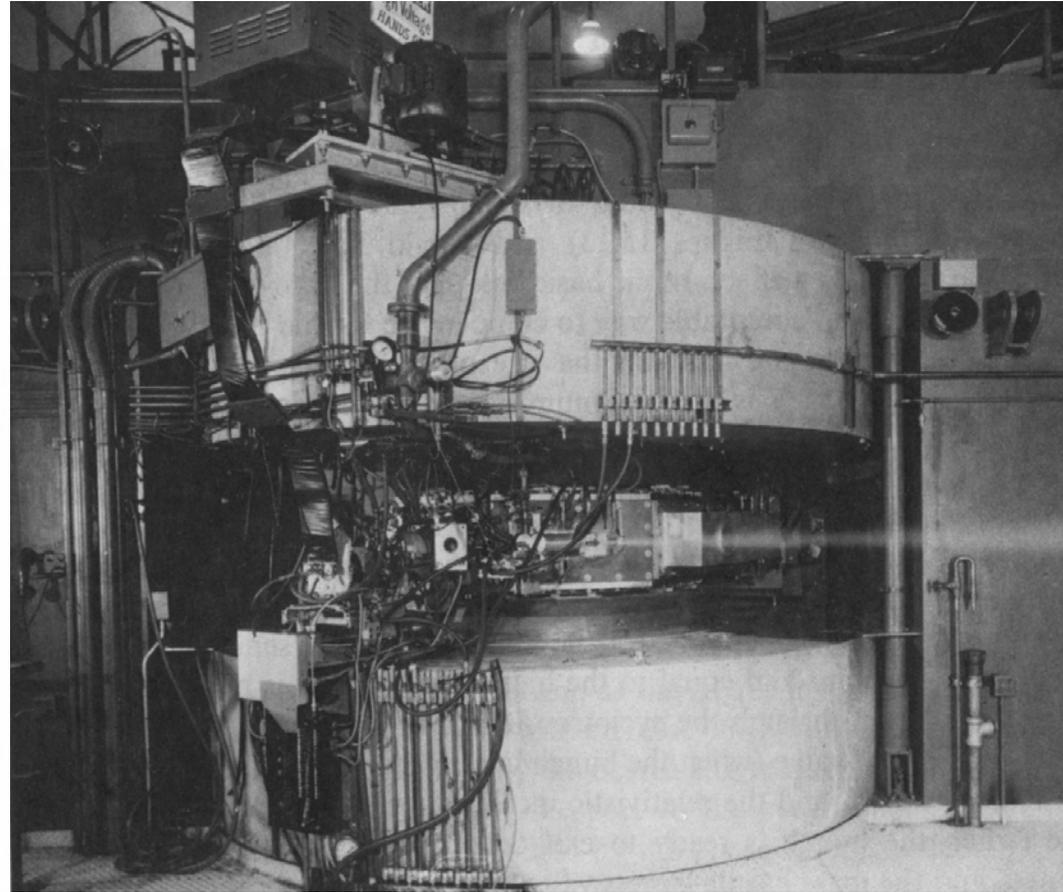
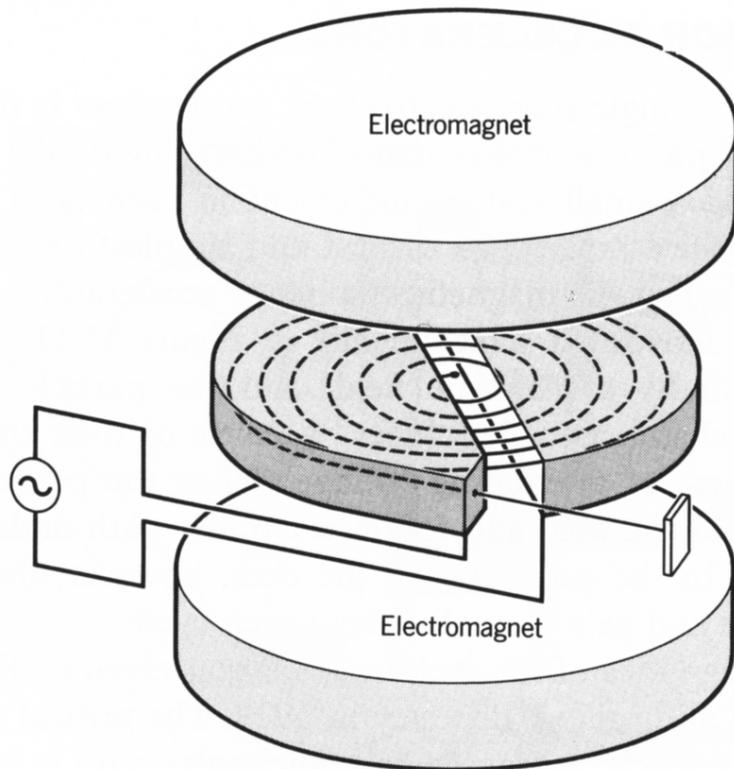
*Maier-Leibnitz-Laboratorium für Kern- und Teilchenphysik*

*der Ludwig-Maximilians-Universität München*

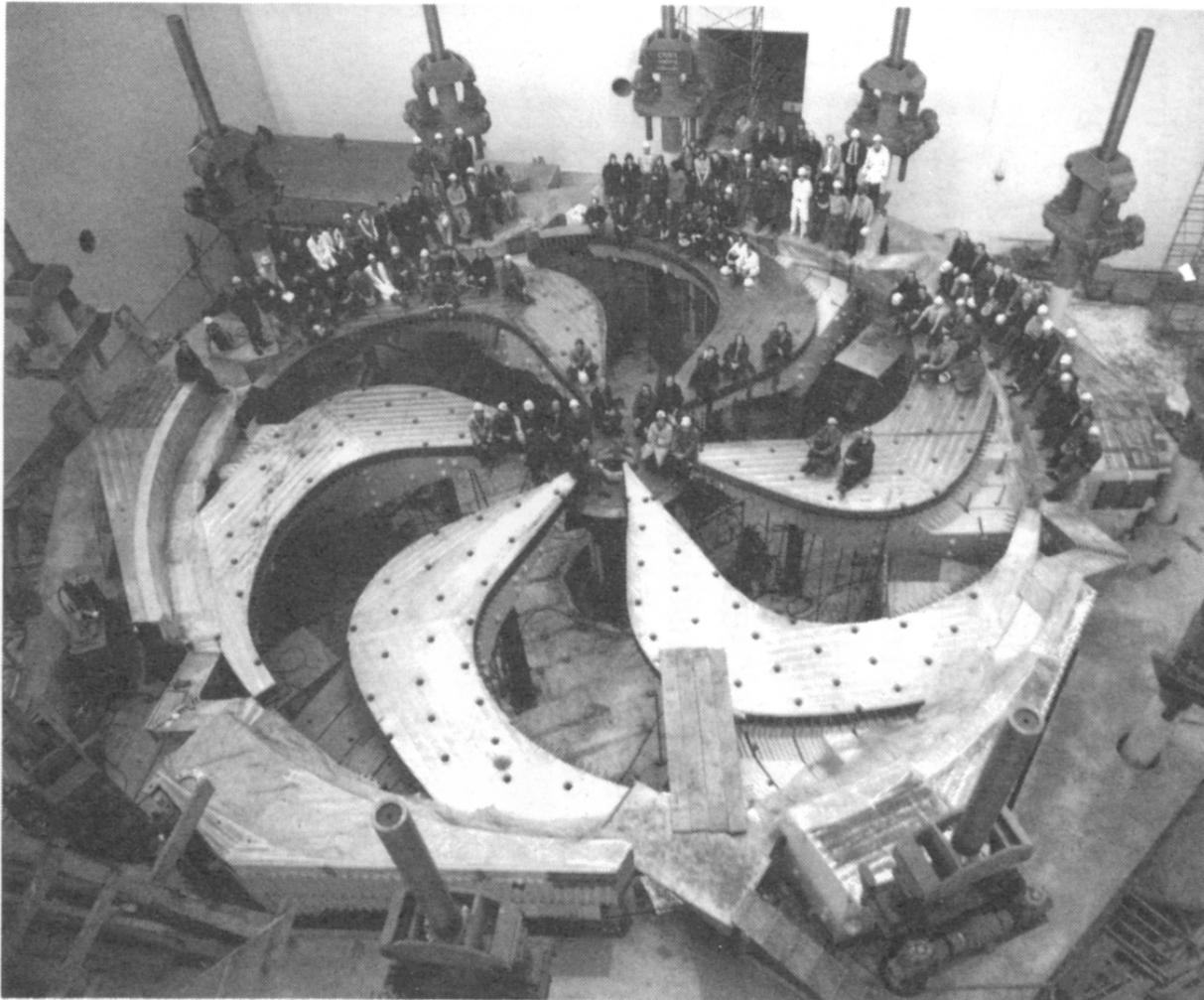
*und der Technischen Universität München*



# Zyklotron 1



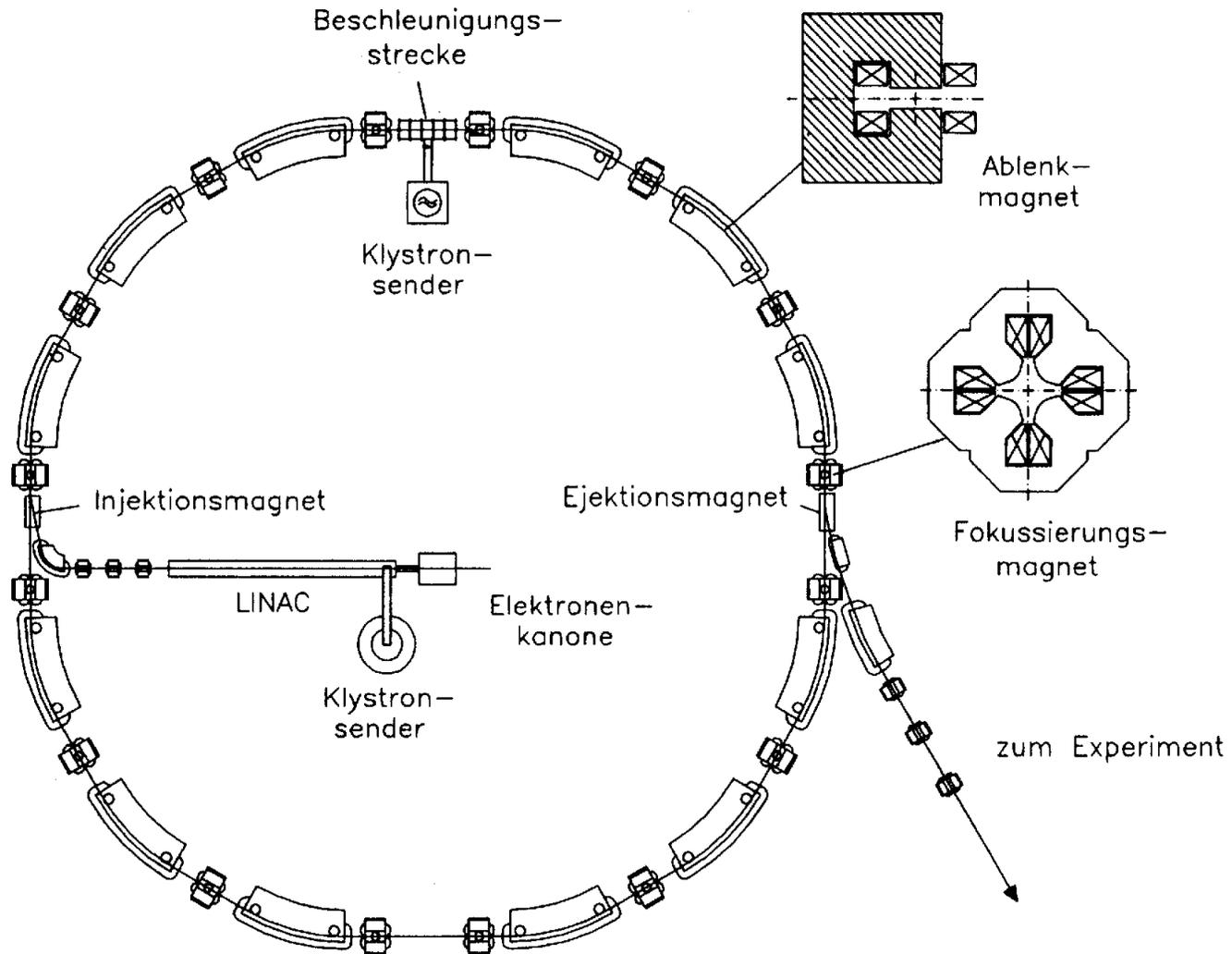
# Sektorzyklotron



520 MeV  
Protonen

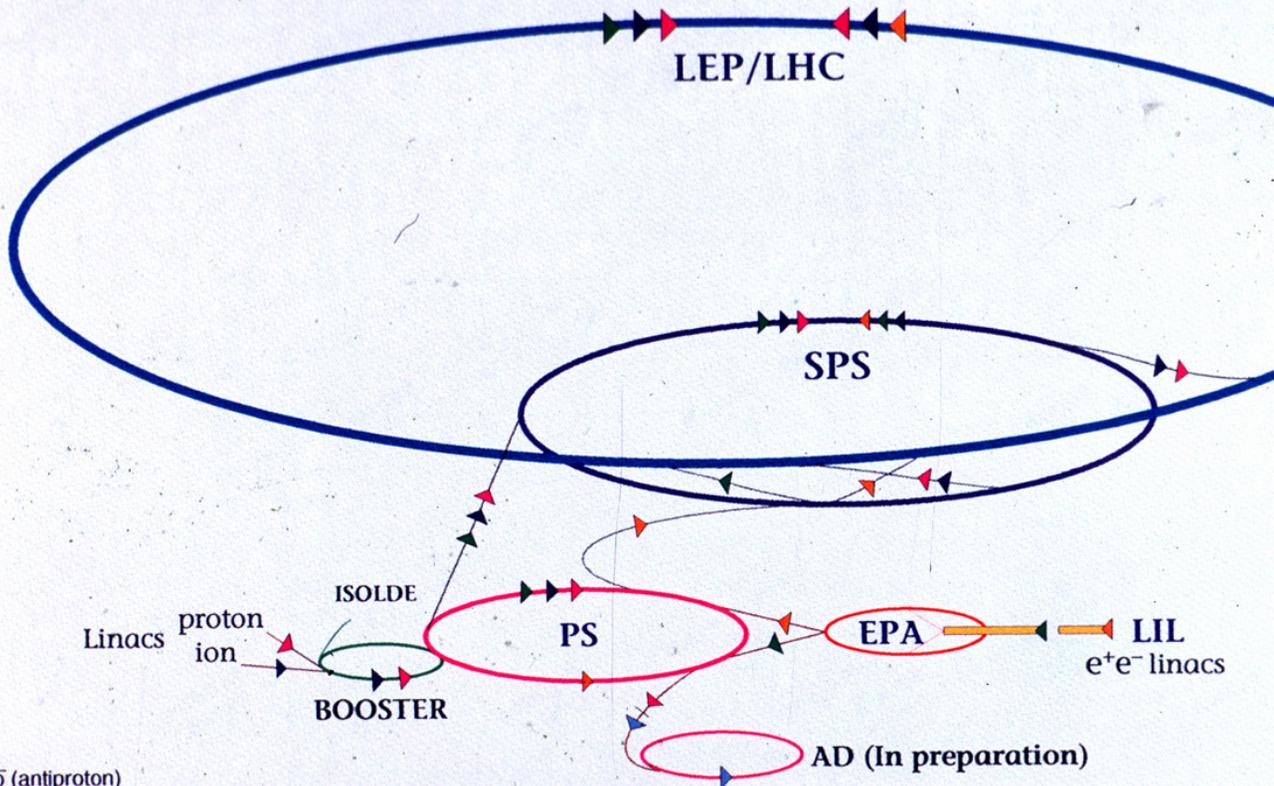
TRIUMF  
(Kanada)

# Synchrotron



# Die CERN Beschleuniger

## CERN's Chain of Accelerators



- ▶  $\bar{p}$  (antiproton)
- ▶ p (proton)
- ▶ ion
- ▶ e<sup>+</sup> (positron)
- ▶ e<sup>-</sup> (electron)
- ▶  $\leftrightarrow$  proton/antiproton conversion

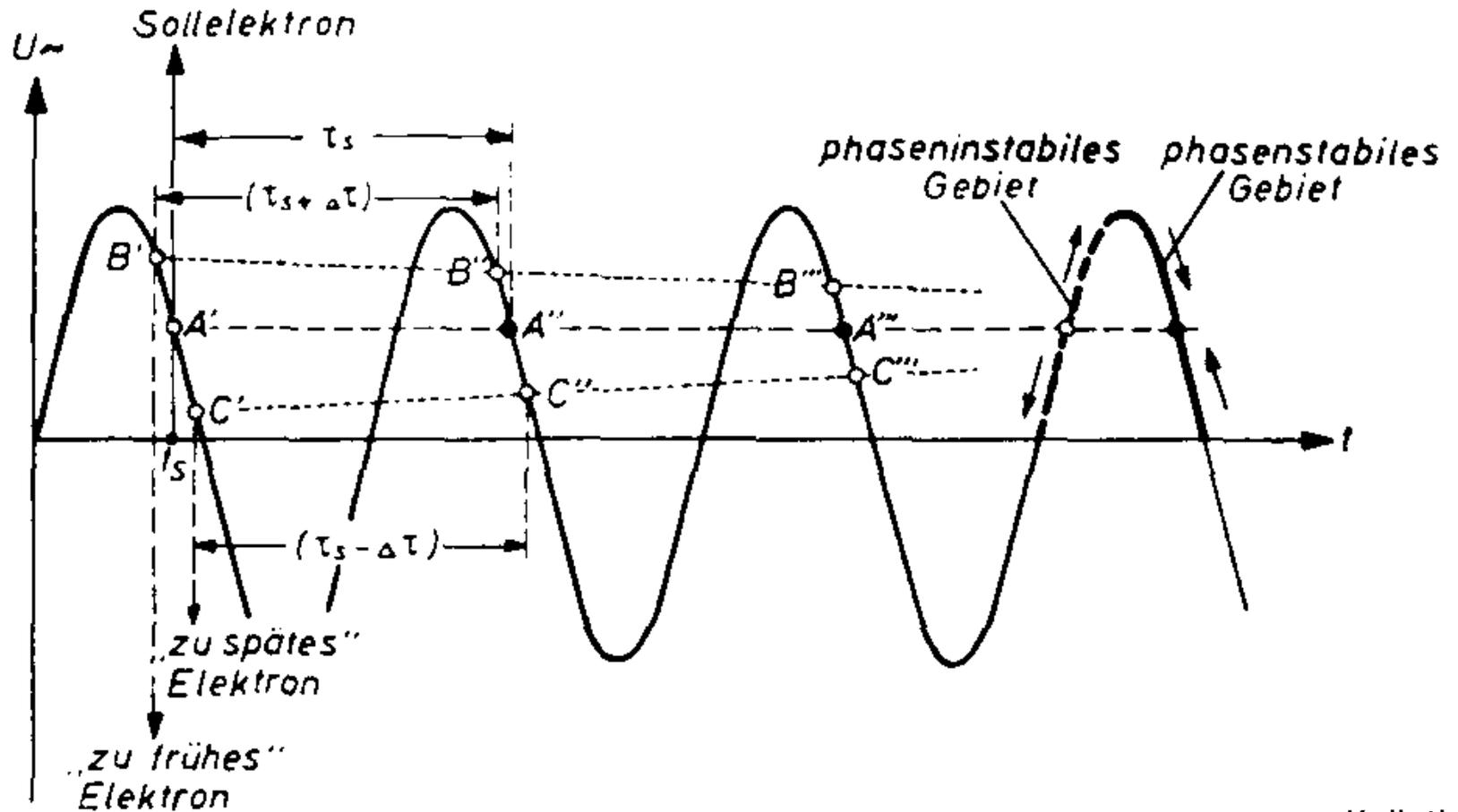
LIL : Linear Injector for LEP  
 EPA : Electron-Positron Accumulator  
 PS : Proton Synchrotron

SPS : Super Proton Synchrotron  
 LEP : Large Electron-Positron Collider  
 LHC : Large Hadron Collider

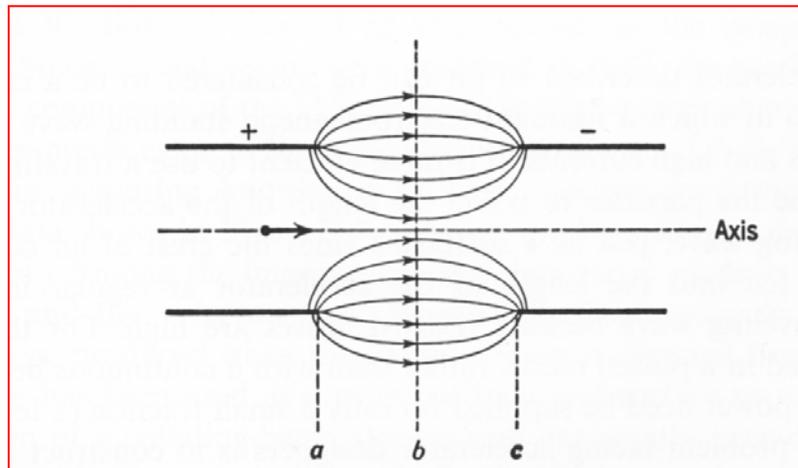
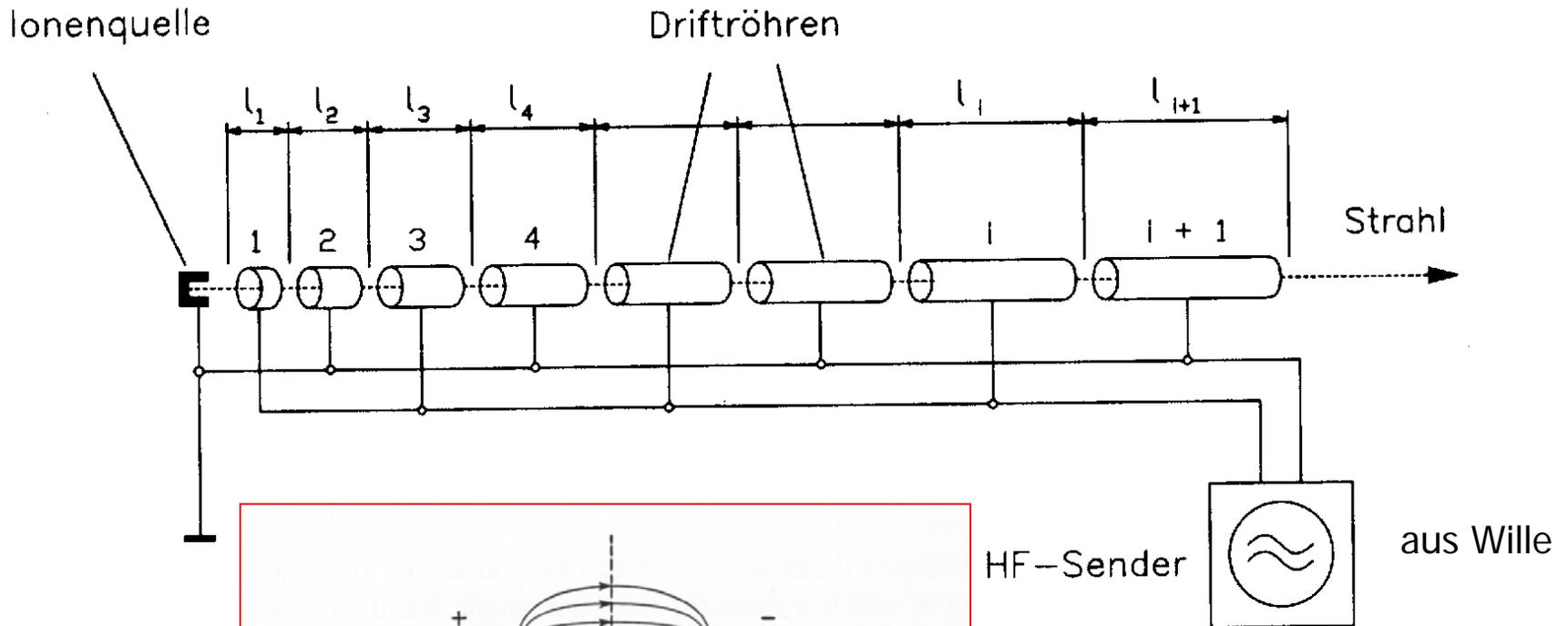
# Das CERN bei Genf



# Phasenfokussierung



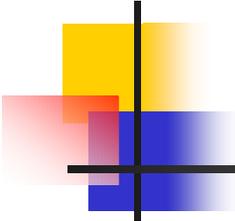
# LINAC (Wideroe Typ)



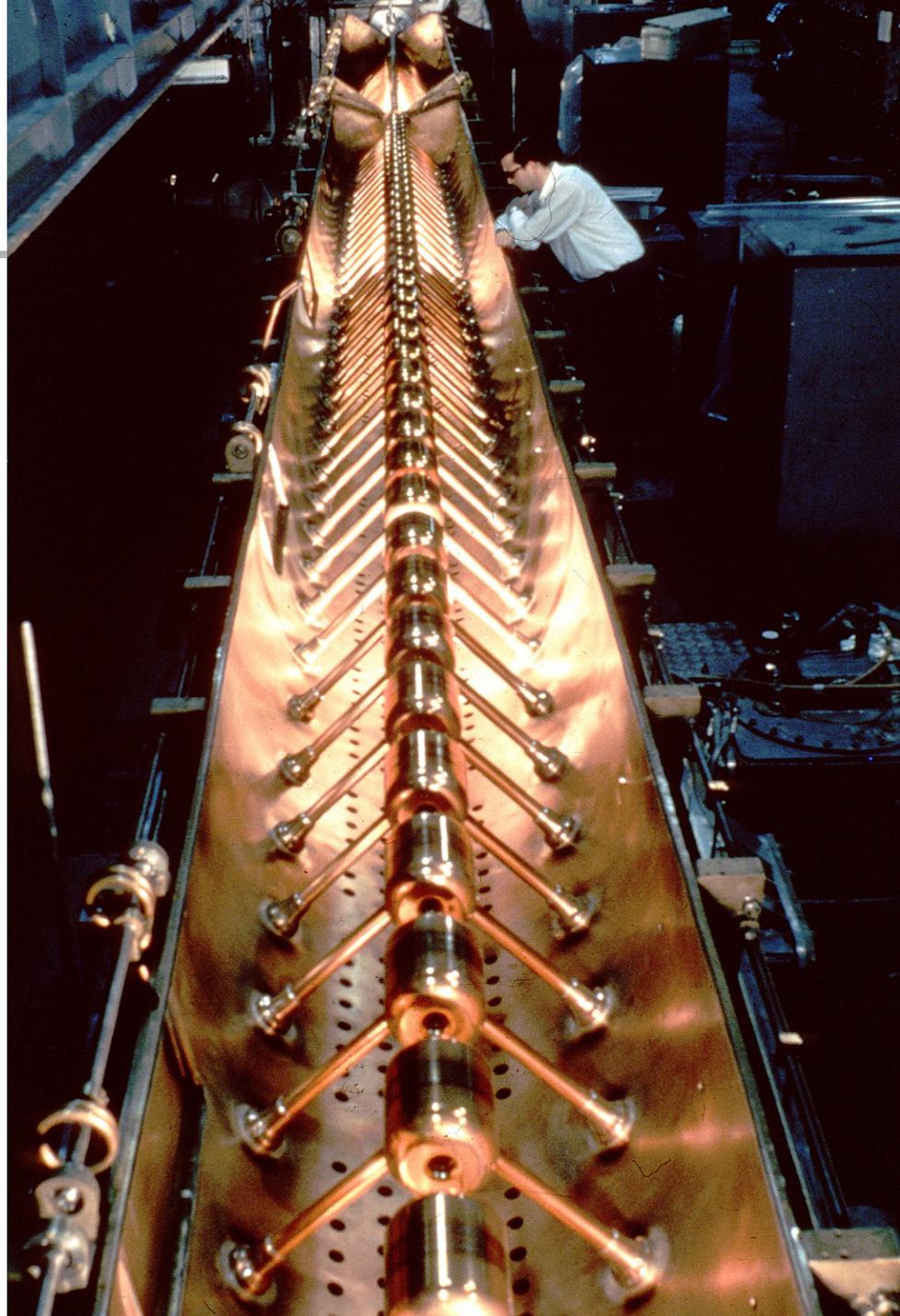
HF-Sender

aus Wille

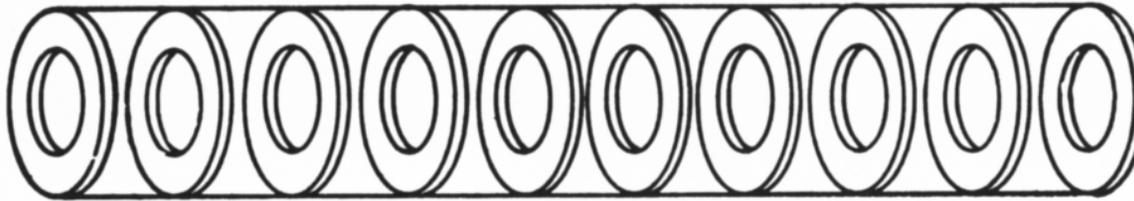
aus Krane



# Protonen LINAC



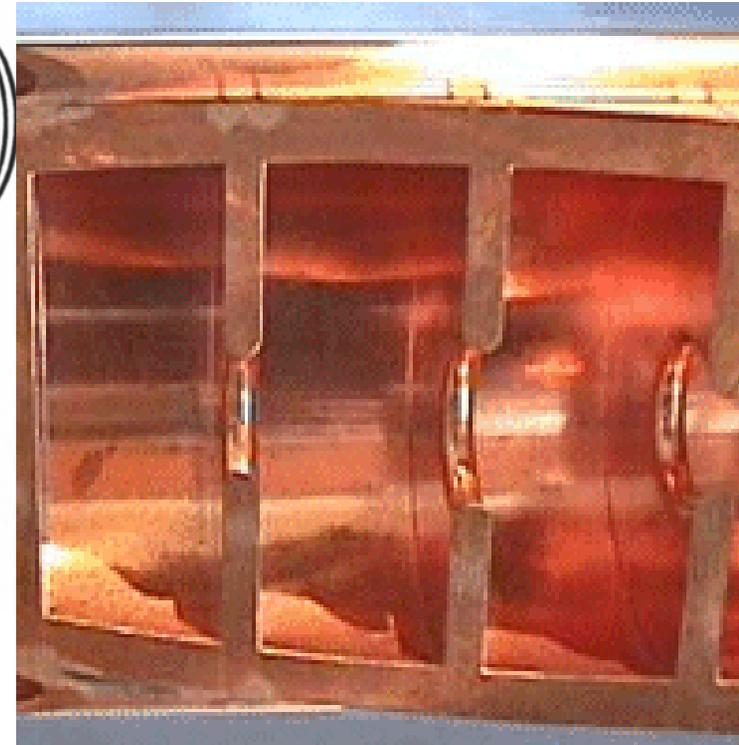
# Hohlleiterstruktur (Runzelröhre)



(a)



(b)

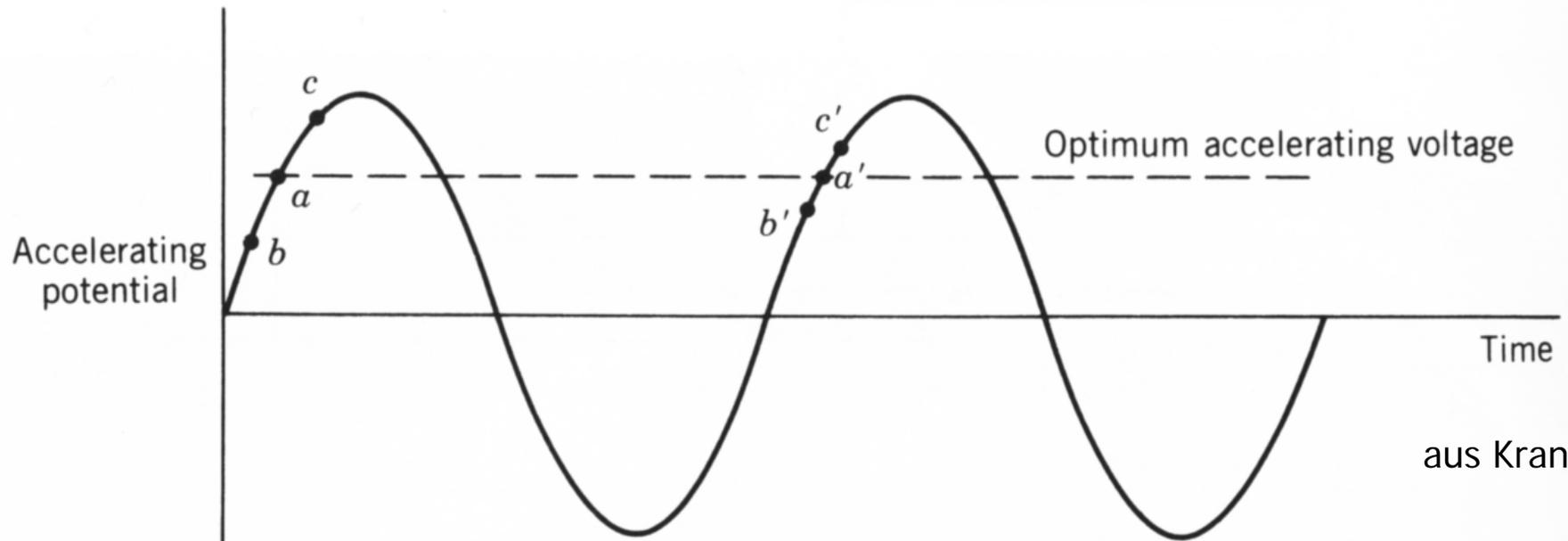


SLAC Struktur

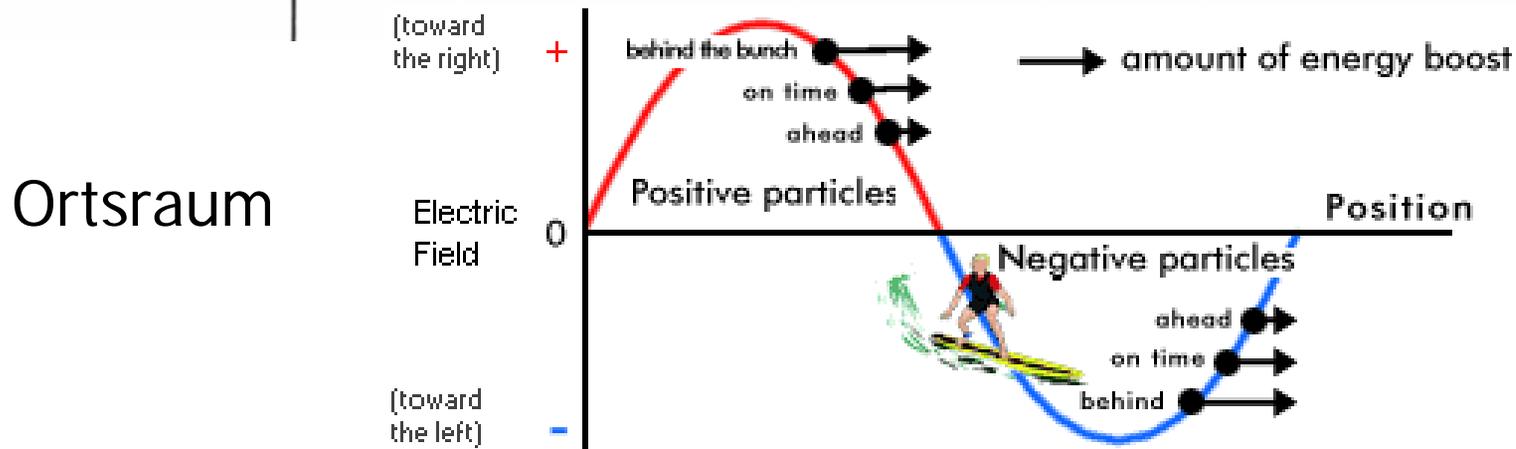


aus Krane

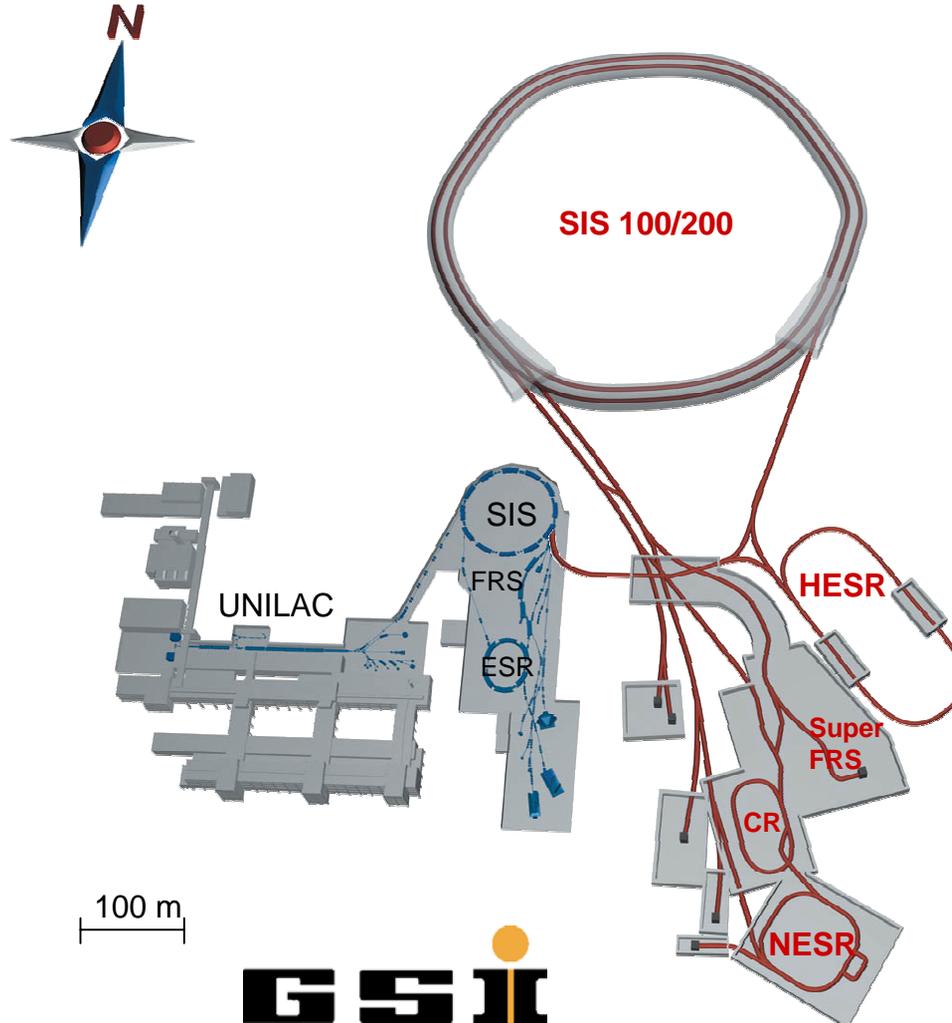
# Phasenstabilität am LINAC



aus Krane



# Schwerionensynchrotron GSI



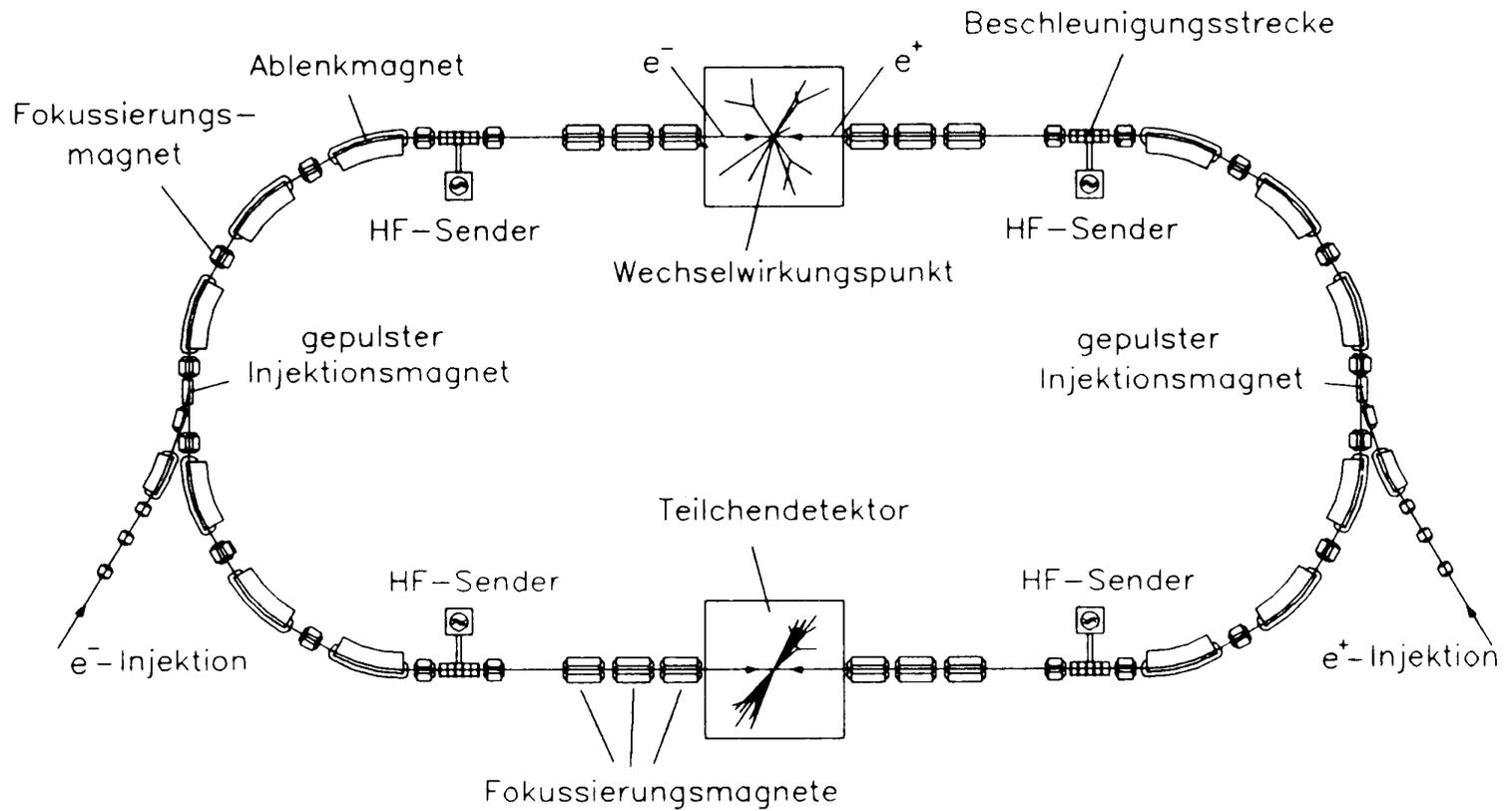
# SLAC in Stanford



$L = 3 \text{ km}$   
 $E_e = 20 \text{ GeV}$

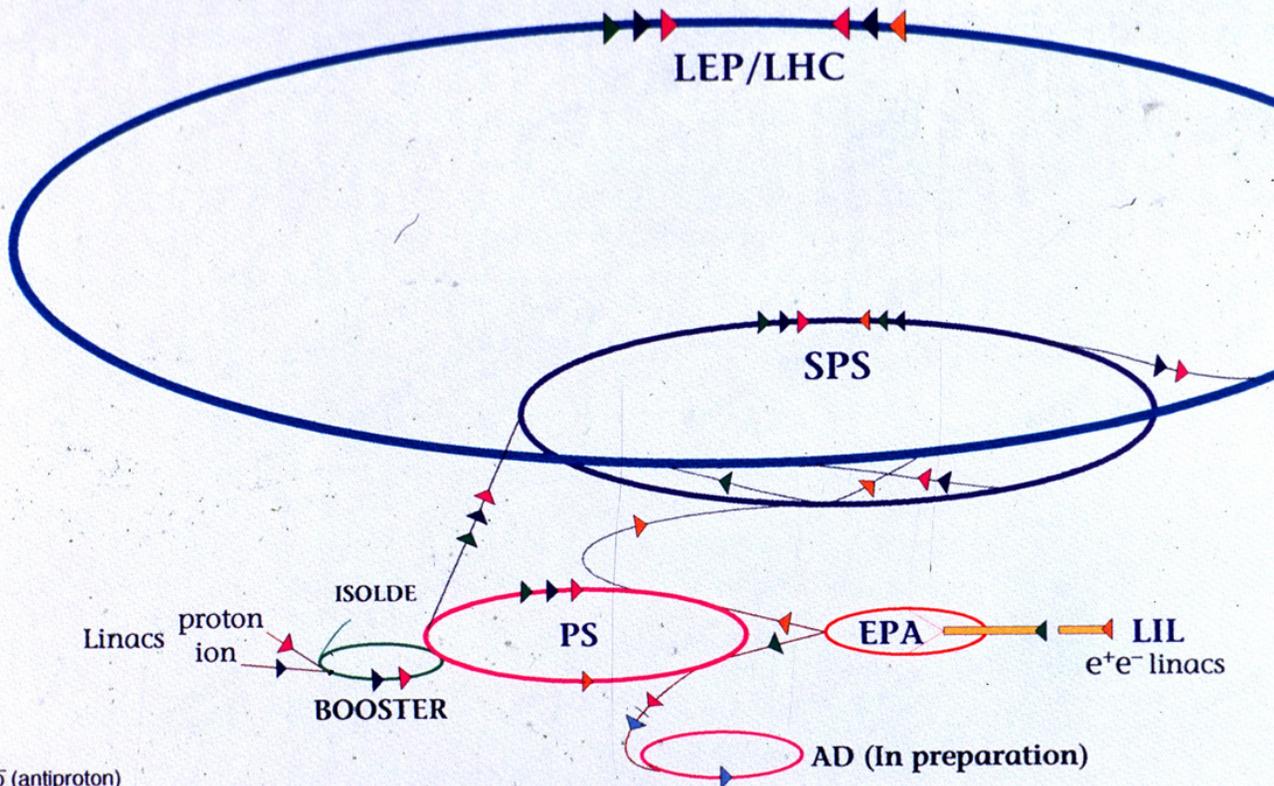
Stanford Linear Accelerator Laboratory

# Collider



# Die CERN Beschleuniger

## CERN's Chain of Accelerators



- ▶  $\bar{p}$  (antiproton)
- ▶ p (proton)
- ▶ ion
- ▶  $e^+$  (positron)
- ▶  $e^-$  (electron)
- ▶  $\leftrightarrow$  proton/antiproton conversion

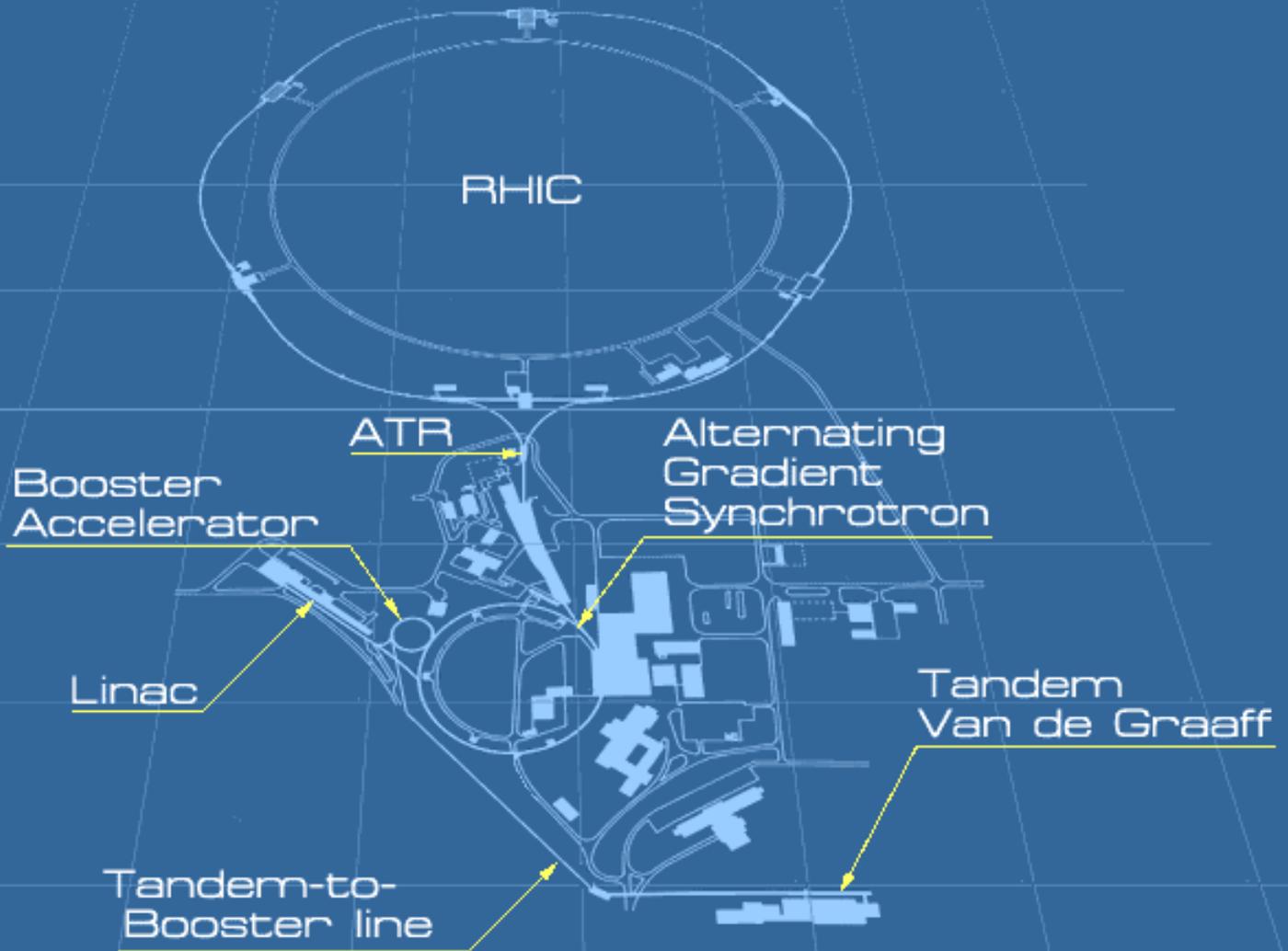
LIL : Linear Injector for LEP  
 EPA : Electron-Positron Accumulator  
 PS : Proton Synchrotron

SPS : Super Proton Synchrotron  
 LEP : Large Electron-Positron Collider  
 LHC : Large Hadron Collider

# Der Relativistic Heavy Ion Collider



# Der Relativistic Heavy Ion Collider



# Wirkungsquerschnitt

