

70

YEARS / ANS CERN  
1954-2024



# CERN 2024

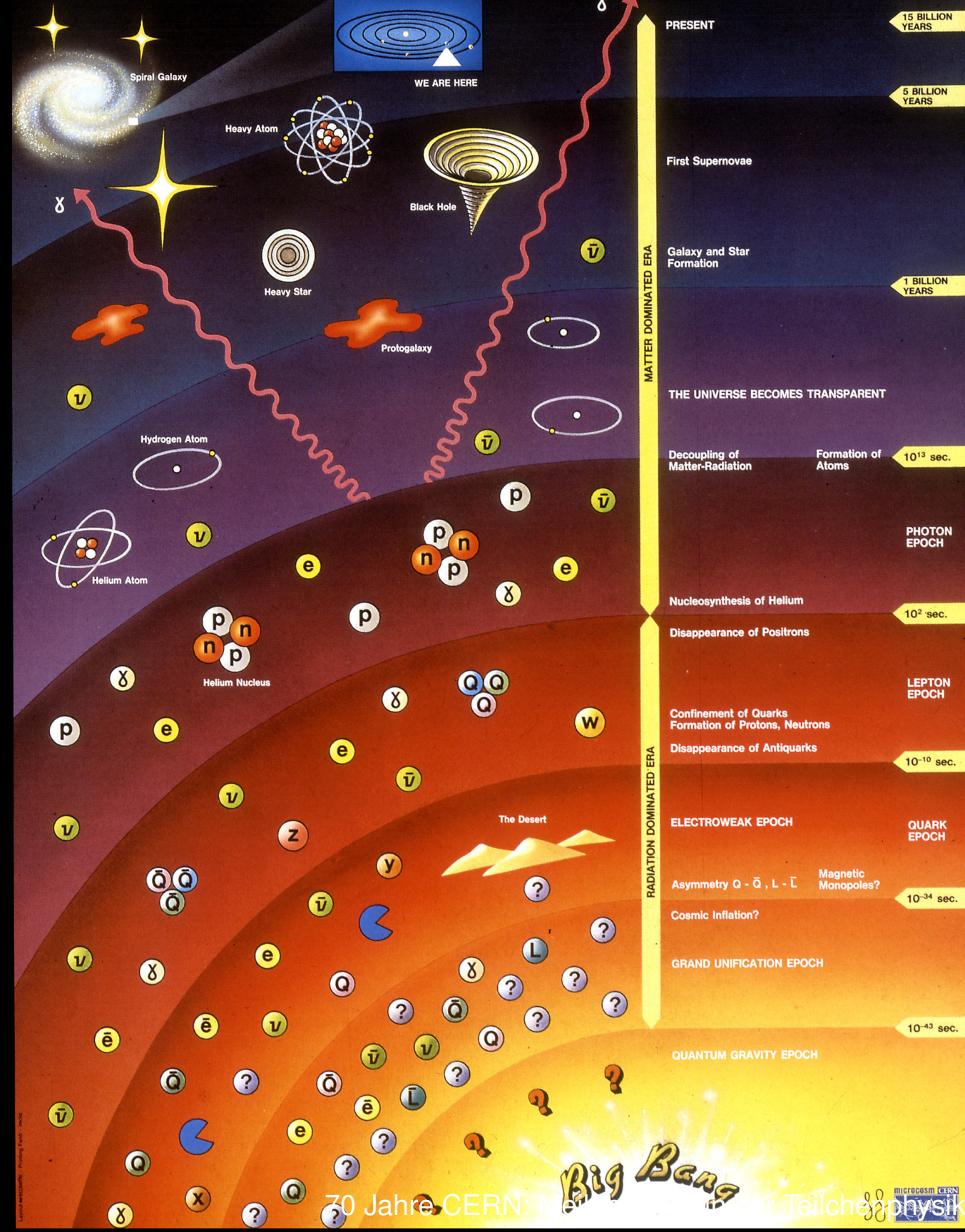




# CERN 1954









# CERN 1965: Das Proton Synchrotron









# Gargamelle: Eine riesige Blasenkammer, die am CERN von 1970 – 1979 genutzt wurde





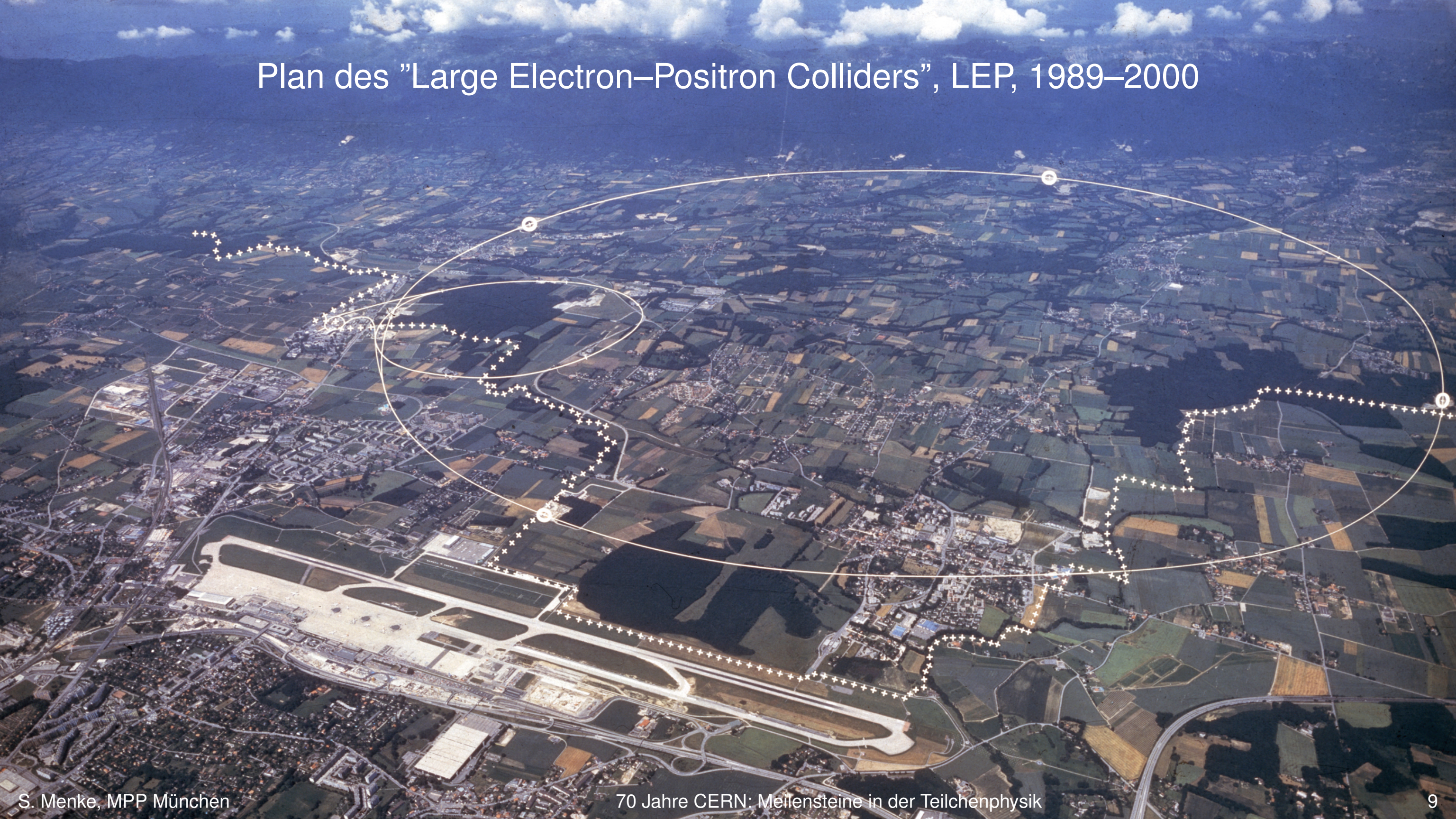
# Ereignisse mit Teilchenspuren in Gargamelle



R72: MILAN  
60444  
477 e<sup>-</sup>  
V. G. Buehler



# Plan des "Large Electron-Positron Colliders", LEP, 1989–2000





# Arbeiten am "Large Hadron Collider", LHC – seit 2009



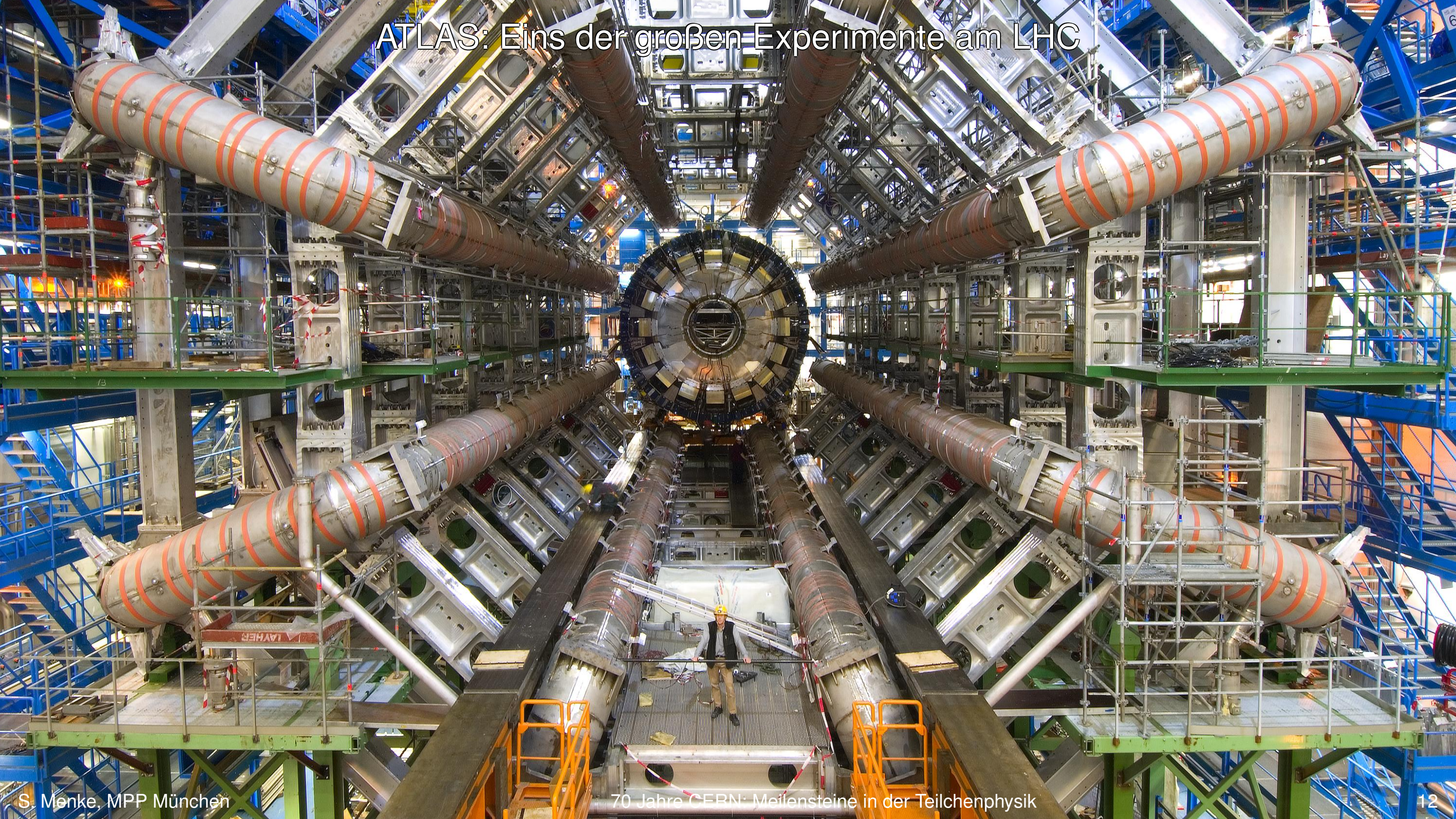


# Die Dipolmagnete des LHC

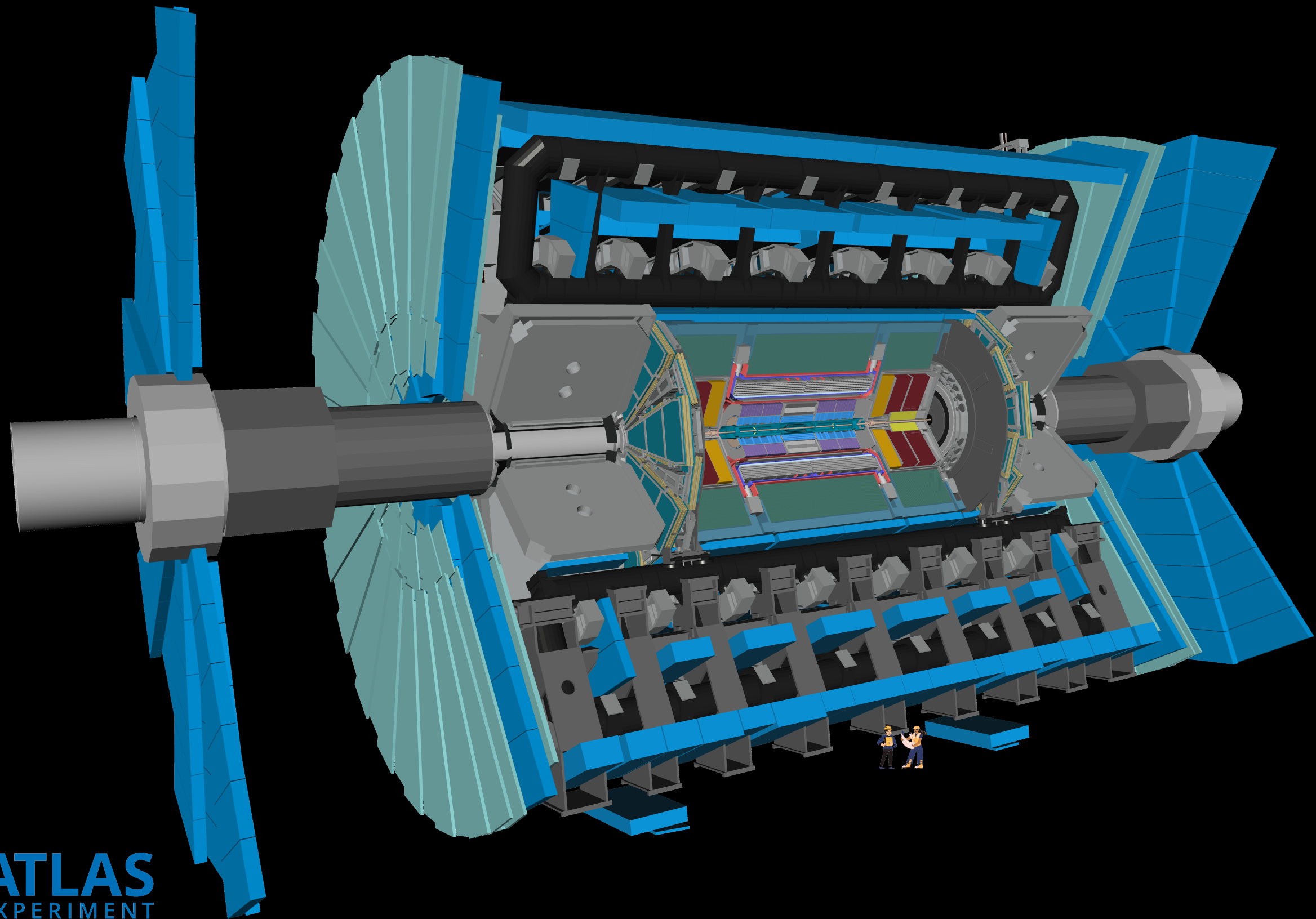




# ATLAS: Eins der großen Experimente am LHC









*13 TeV collisions*

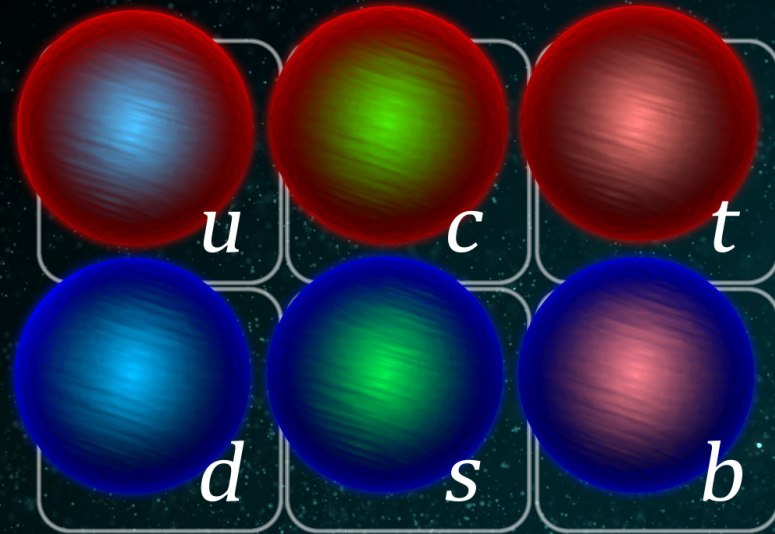
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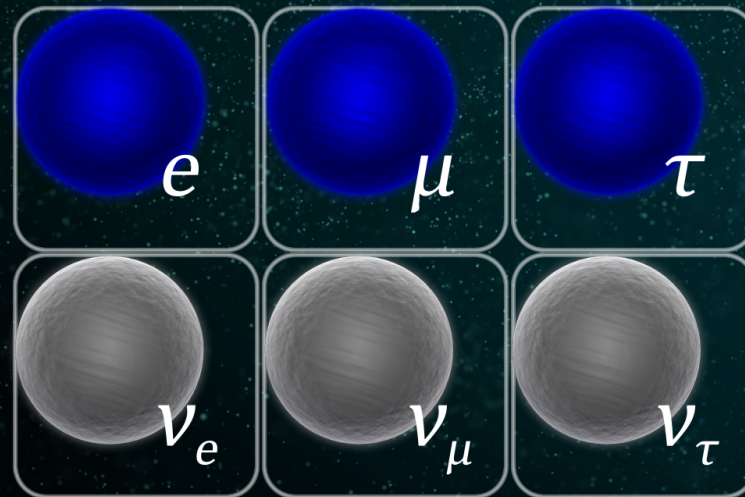
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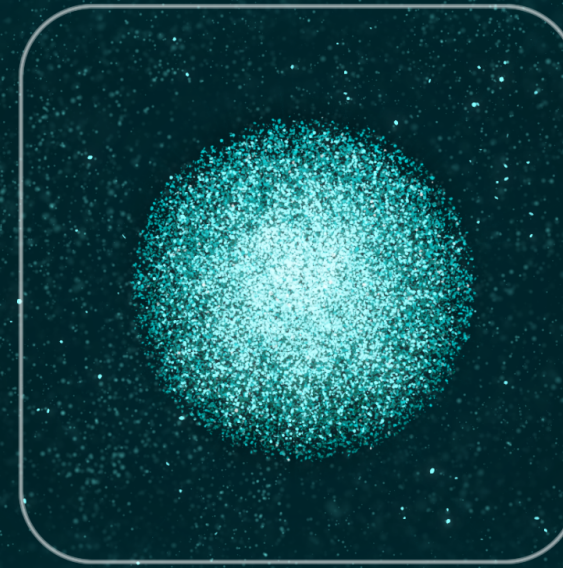
# Das Standardmodell der Teilchenphysik



Quarks



Leptons



Higgs boson



Forces



ACCELERATING SCIENCE



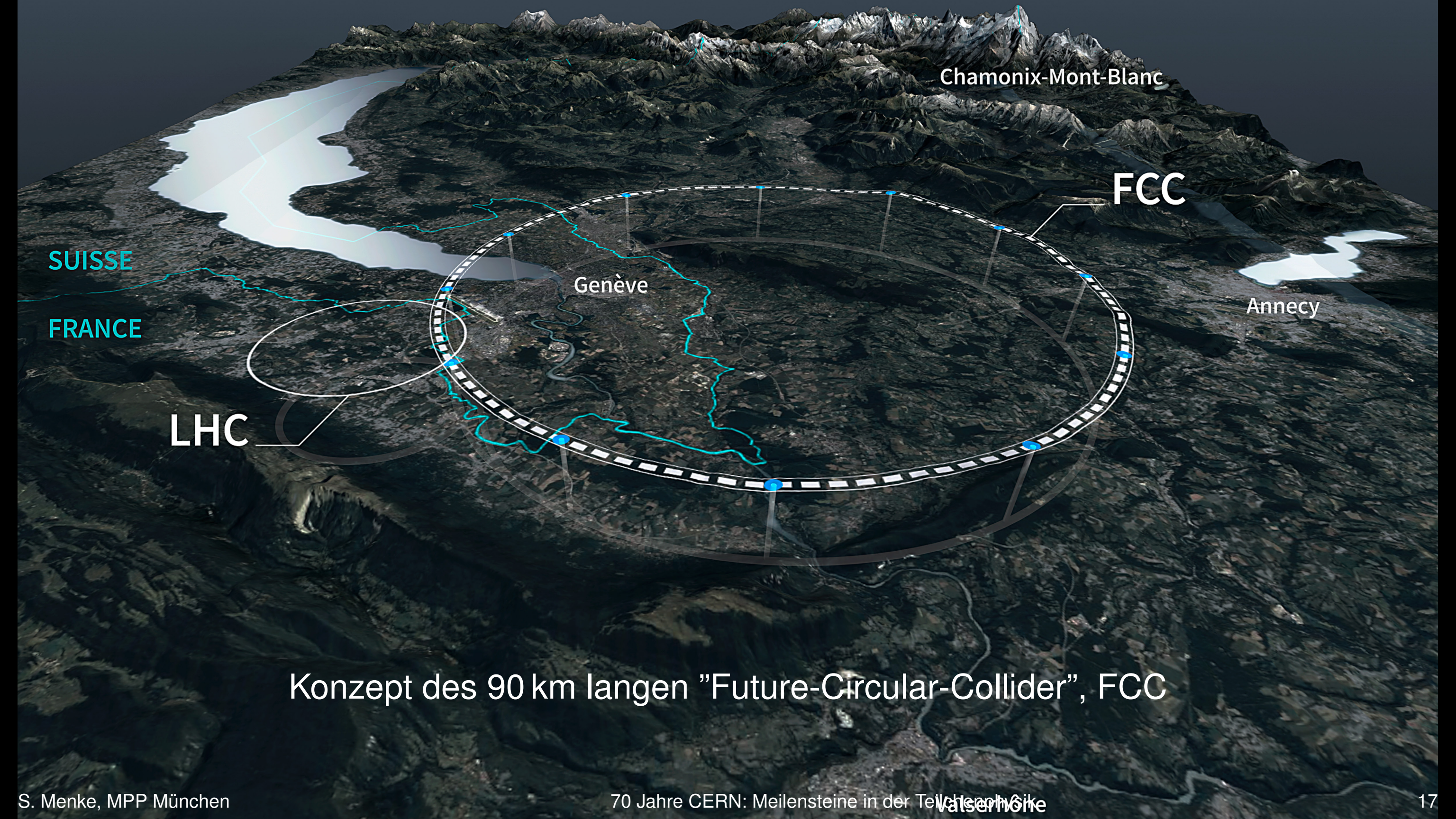
# François Englert und Peter Higgs

$$\mathcal{L} = -\frac{1}{4} F_{\mu\nu} F^{\mu\nu} + i \bar{\Psi}_a \not{D} \Psi_a + \text{h.c.}$$

$$+ \Psi_a \gamma_{ab} \not{\partial}_b \phi + \text{h.c.}$$

$$|D_\mu \phi|^2 - V(\phi)$$





Konzept des 90 km langen "Future-Circular-Collider", FCC



