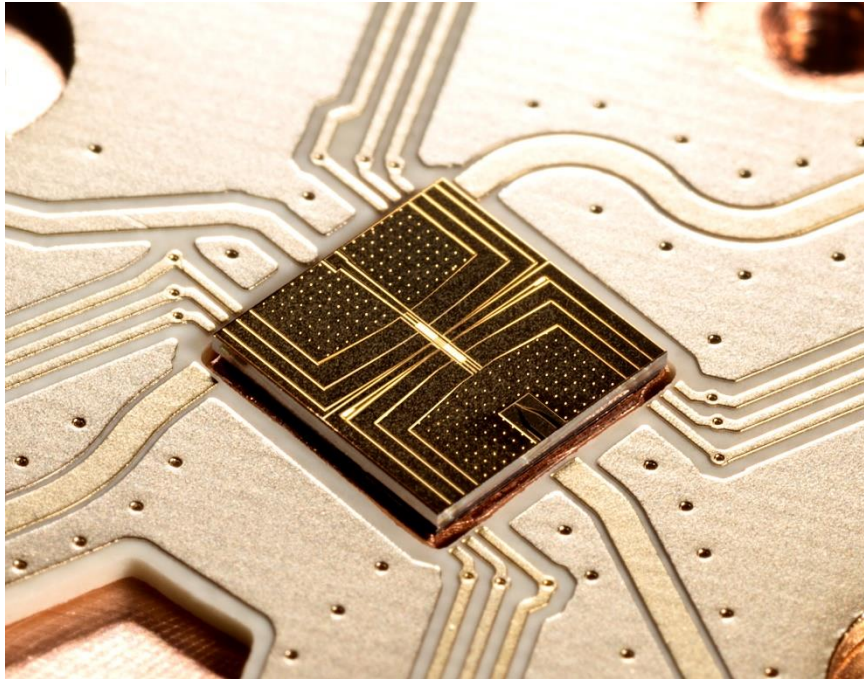


Trapped Ion Quantum Engineering

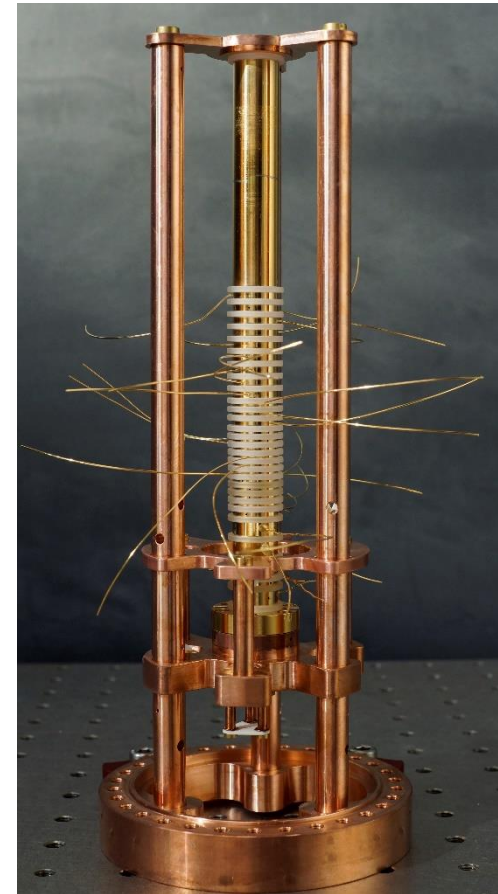
Arbeitsgruppe Prof. Dr. C. Ospelkaus

Johannes Mielke



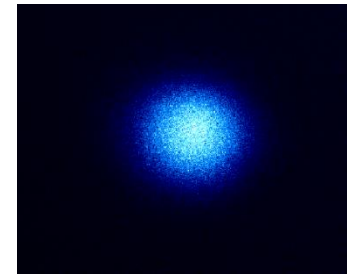
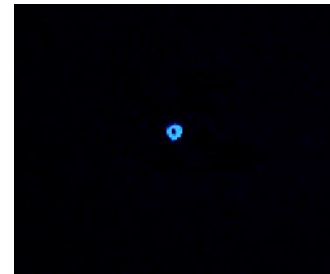
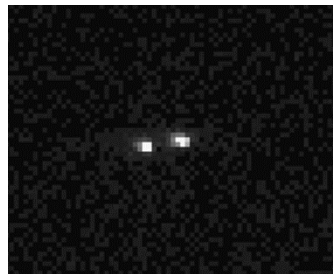
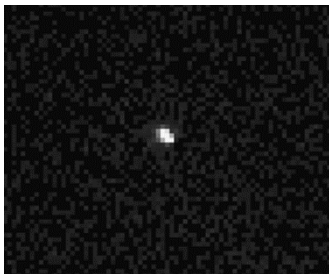
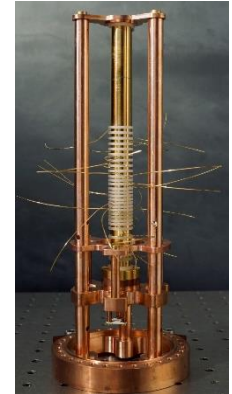
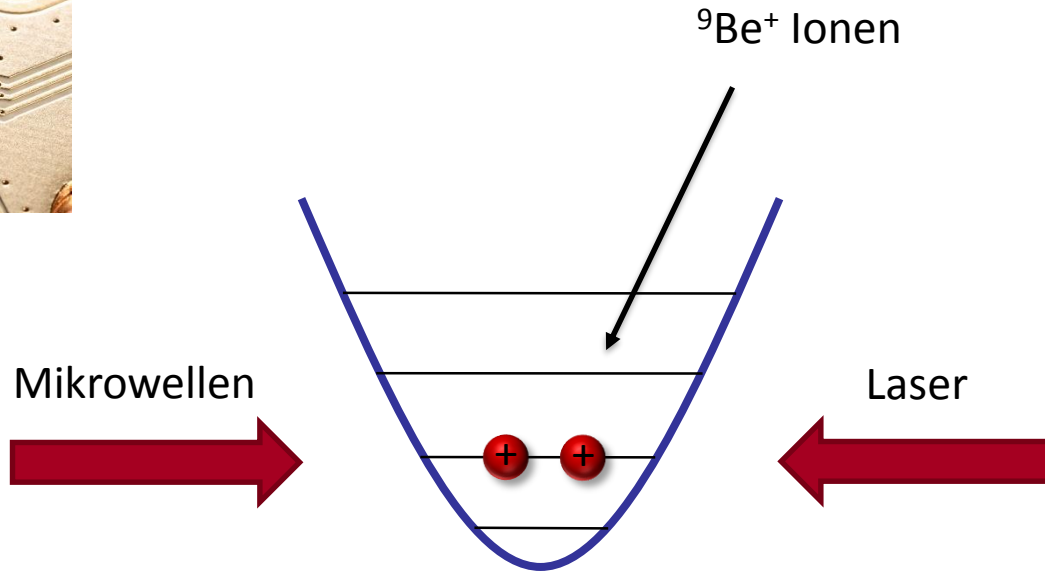
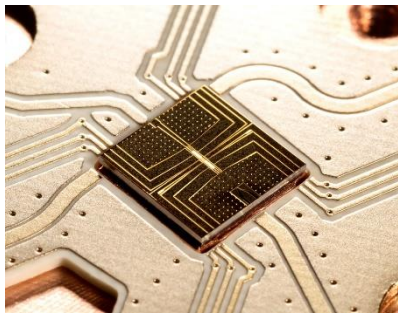
Paulfalle

→ Elektrische Wechselfelder



Penningfalle

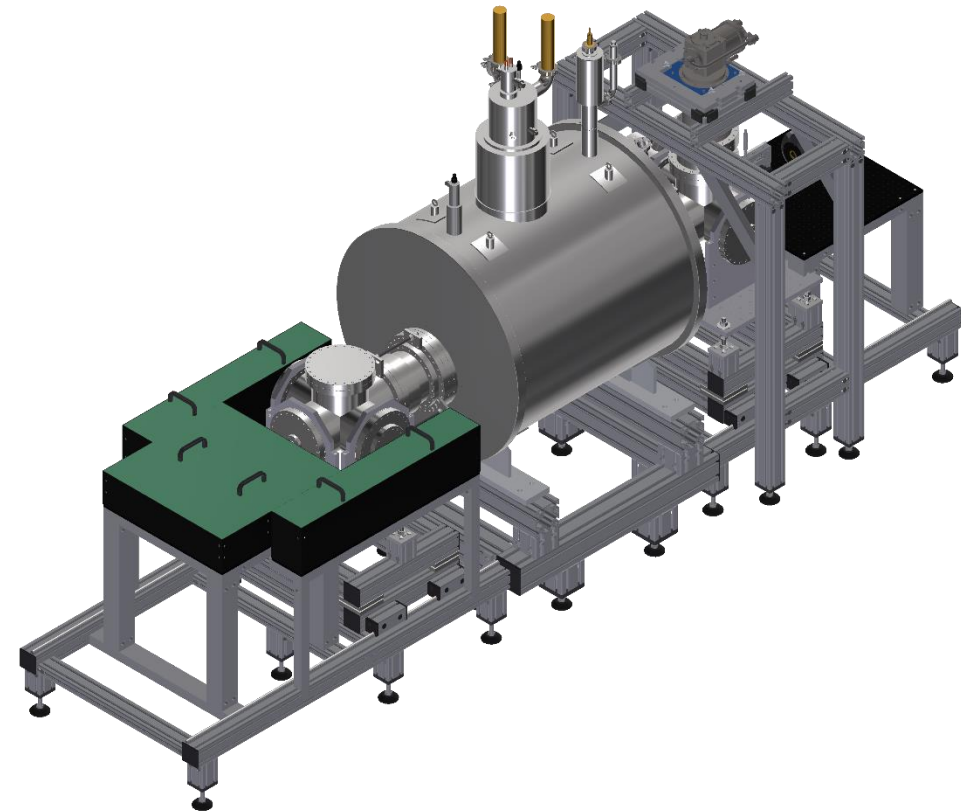
→ statische elektrische
& magnetische Felder





Hochpräzisionsmessungen

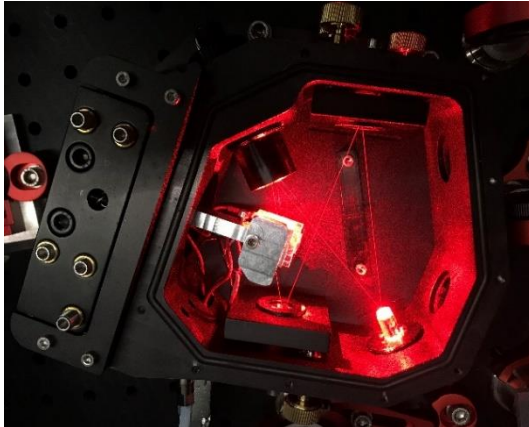
- Vergleich fundamentaler Eigenschaften von Protonen und Antiprotonen
- Messprotokolle auf Basis einfacher Quantenlogik



Quantensimulation

- Entwicklung neuartiger Fallen
- Implementation von Quantenalgorithmen

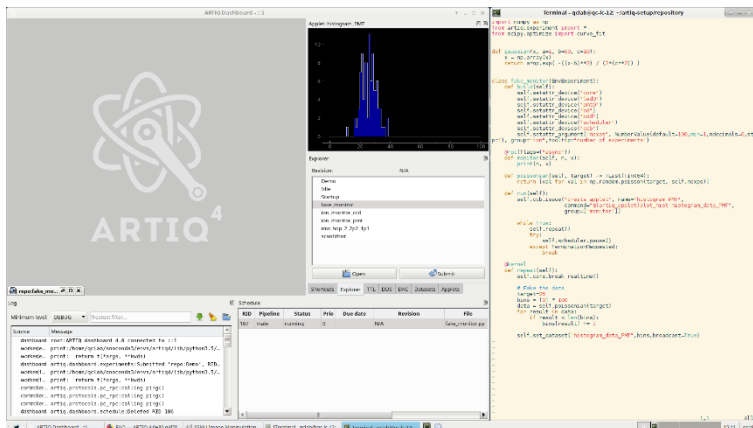
▶ **Optik** (Lasersysteme, Abbildungsoptiken)



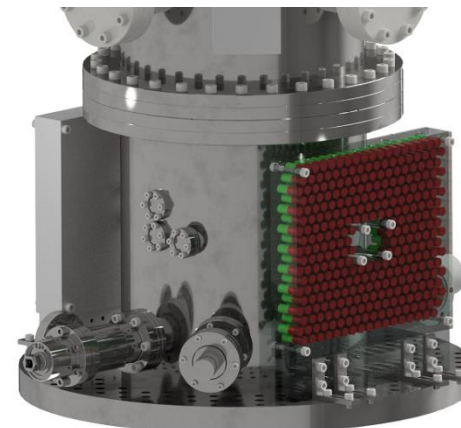
▶ **Elektronik** (Resonatoren, Regelschleifen)



▶ **Programmieren** (ARTIQ, Python)

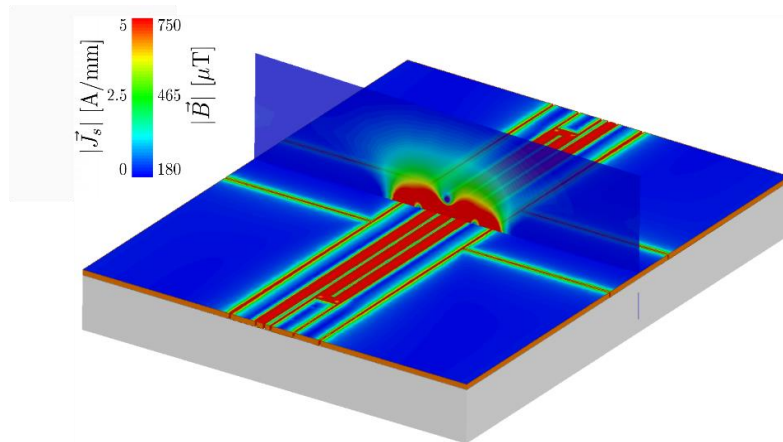
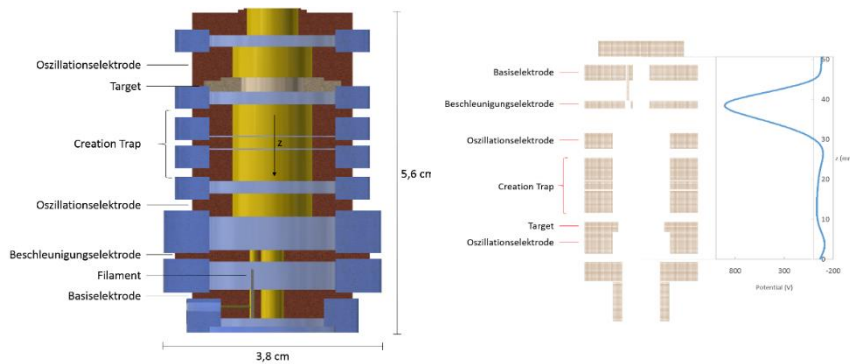


▶ **„Spezial“** (rauscharme Magnetfelder)



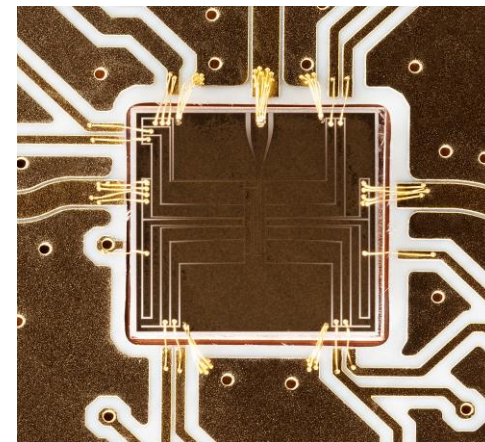
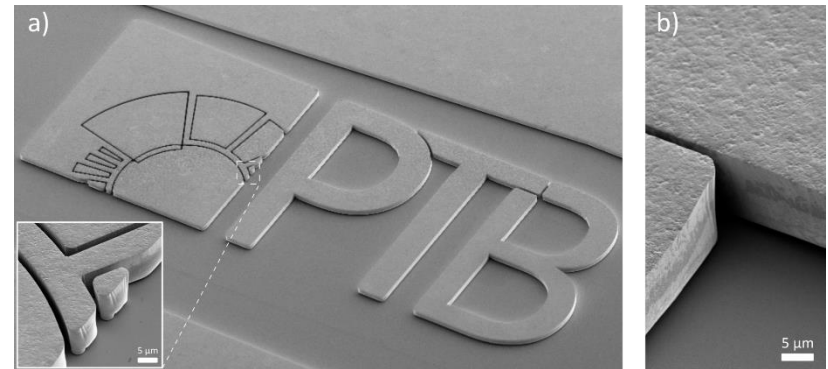
► Simulationen

(Fallensimulationen mit SIMION oder ANSYS HFSS)



► Mikrofabrikation

(Fallenfabrikation im Reinraum)



- ▶ Labore im IQO, LNQE oder PTB



- ▶ Kollaboration mit CERN





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