

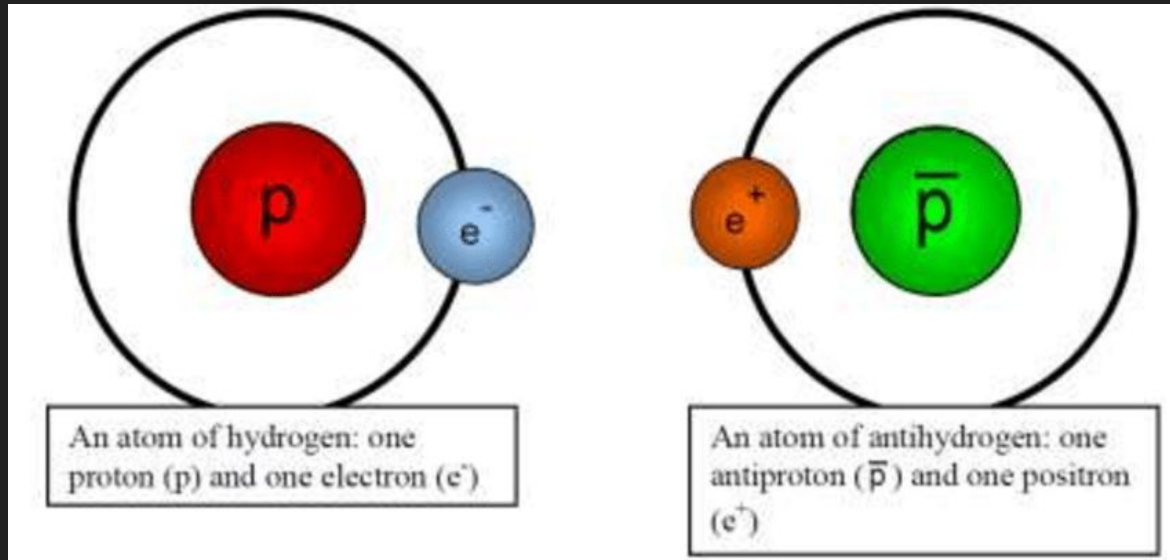
# 2024 Summer Semester at CERN - Preliminary

Cheng Chiu



# Purpose

Investigate any asymmetry between matter and antimatter, with antihydrogen



[https://www.researchgate.net/figure/Description-of-hydrogen-and-antihydrogen-atom-2\\_fig1\\_343695668](https://www.researchgate.net/figure/Description-of-hydrogen-and-antihydrogen-atom-2_fig1_343695668)

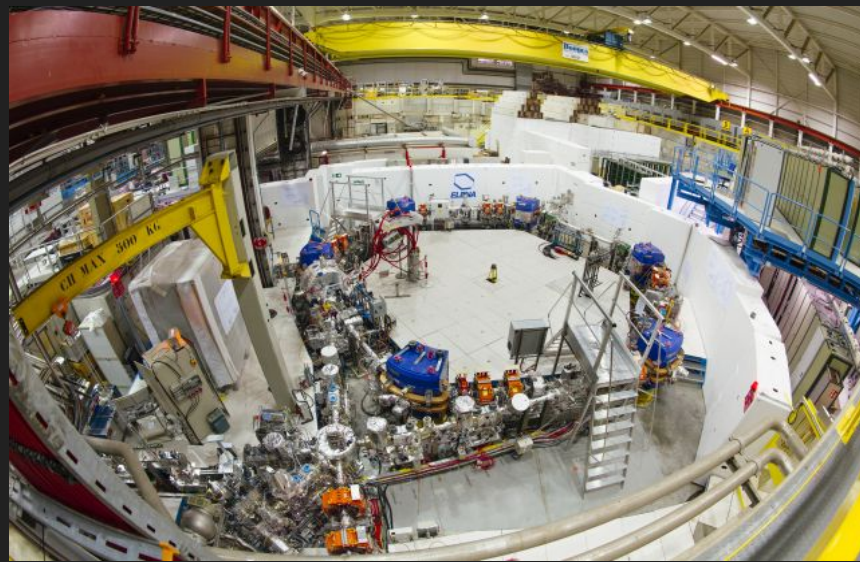
# Apparatus

Antiproton Decelerator (AD)



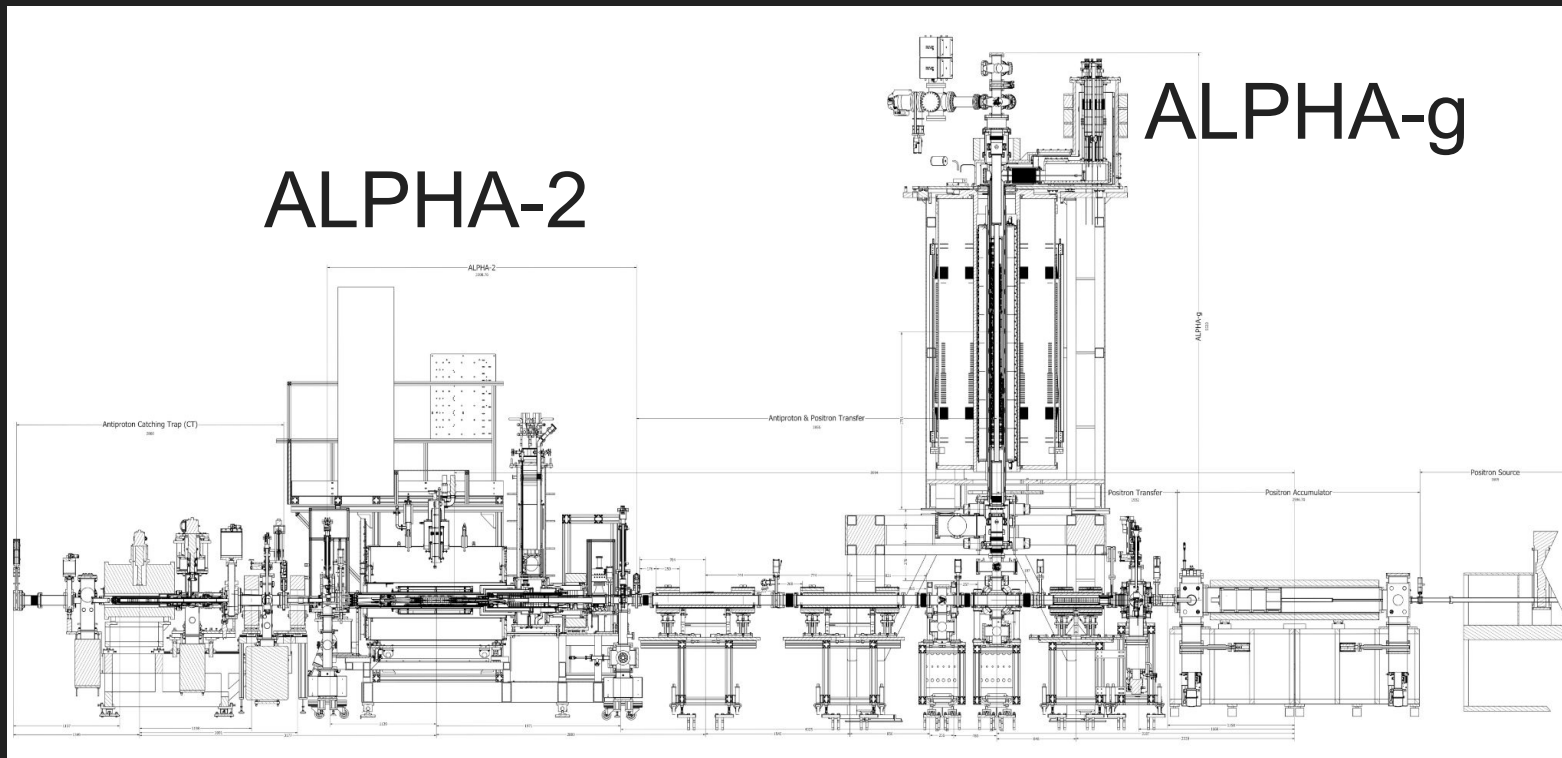
<https://cds.cern.ch/record/39385>

ELENA



<https://home.cern/fr/node/4325>

# ALPHA Apparatus



<https://alpha.web.cern.ch/how-alpha-works>

# Responsibilities and Projects

- Shifts: experiment log and analysis, cryogenic operations
- Laser alignment of  $2S4P$  transition for antihydrogen
- Analysis on the of  $Be^+/e^+$  mixture profile and centrifugal separation at low temperatures
- Implementation of feasibility test for  $Be^{2+}$  or  $p^+$  source in sympathetic cooling of positrons using simulations

# Mentors



Joos Danjeel Schoonwater



Dr. Kurt Thompson



Dr. Ina Carli

# Control Room

