Department of Physics and Astronomy

- In short -

UPPSALA UNIVERSITET

Outline:

- Department and organisation
- Education
- Research infrastructure
- Priorities

UPPSALA
UNIVERSITET

Department in short:

- Head of Department – Richard Brenner (*Professor in High Energy Physics*)
- Dept. Head of Department – Andreas Lindblad (*Senior Lecturer/Associate Professor in X-ray Photon Science*)
- Members in depart,ment management group: Maxim Zabzine, Annica Black-Schaffer, Gabriella Andersson, Carolina Wallström-Pan, Lars Nordström, Urban Eriksson, Håkan Rensmo, Johan Söderström

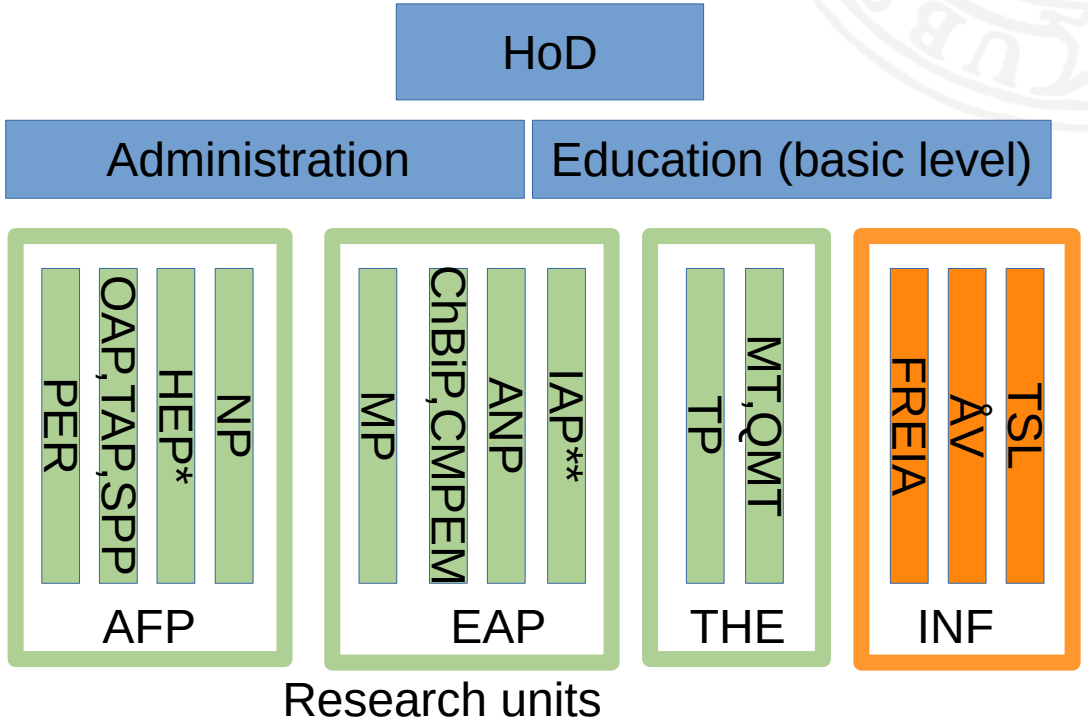
- Personnel (~450)
  - Number of faculty – 90
  - Number of researchers – 88
  - Number of postdocs - 86
  - Number of PhD students – 126
  - Administrative staff – 25
  - Technical staff - 30

- Economy (2023 data)
  - Annual budget research: 353 MSEK (53% external funding)
  - Annual budget Education 62 MSEK (1% contract education)

UPPSALA UNIVERSITET

Organisation :

- Recommendation in KOF2017 to reorganize the department to improve the strategic processes.
- The research programs are grouped into 3 units + 1 infrastructure unit:
  - **A**stronomy and **F**undamental **P**hysics
  - **E**xperimental and **A**pplied **P**hysics
  - **THE**ory
  - **INF**rastructure

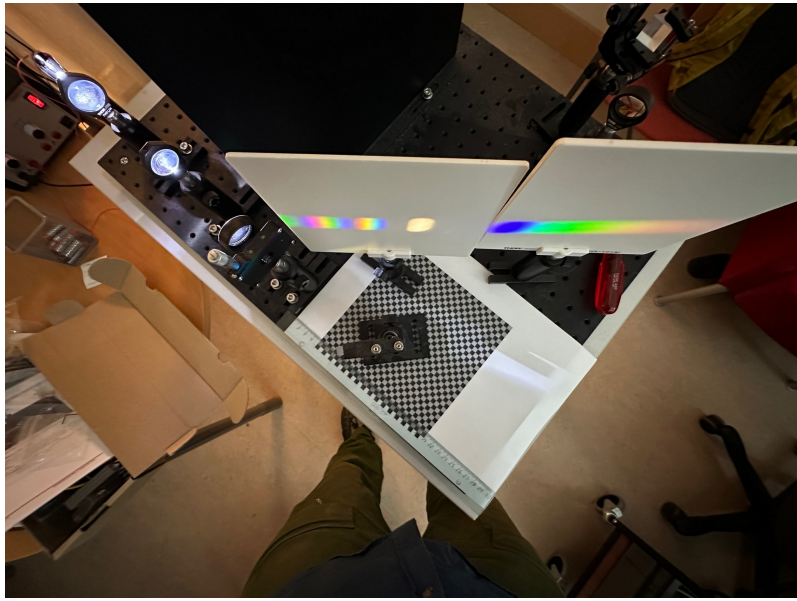


* Accelerator research of HEP program in FREIA division
** Instrumentation and accelerator program in FREIA division

UPPSALA UNIVERSITET

Education:

- Department (*c.* 200 courses*/year; *c.* 700 students**/year):
  - **Science & Technology Preparatory Year** – 1 year
  - **Bachelor in Physics** – 3 years
  - **MSc. in Physics** – 2 years
    - Astronomy and Space Physics
    - Energy Physics
    - Nuclear and Particle Physics
    - Theoretical Physics: Quantum, Field and Strings
  - MSc. in Bio-Physics – 2 years
  - MSc. In Quantum Technology – 2 years
- Faculty-organized:
  - **MSc. in Engineering Physics**
    - Applied physics
  - MSc. in Engineering Physics with Material Sciences
  - MSc. Programme in Energy Systems Engineering
  - MSc. in Material Science



UPPSALA UNIVERSITET

*) some courses are given several times

**) student FTE: sum students/course*credits/(60 credits/year)

PhD Education @ Department

- **5 PhD subjects/curricula (# <u>active</u> PhDs Jan-June 2024)**
  - Theoretical Physics (2 F + 8 M)
  - Physics with spec. Physics Education (3 F + 1 M)
  - Physics – merged from 6 subjects* (36 F + 60 M)
  - Physics with spec. Space and Plasma Physics (1 F + 5 M)
  - Astronomy and Astrophysics – merged from 3 subjects* (5 F + 5 M)

126 PhDs 2024:
47 female (F) – 37%
79 male (M) – 63%

- The *Physics subject* is distributed over 9 research programs
- The *Astro-Space subjects* are distributed over 3 research programs + 1 institute (IRF)
- PhD students are mostly hired on externally funded projects, with PI as supervisor (at least 2 supervisors are required, by Swedish law)
- Admission (and graduation) of 20-25 PhD students per year; ~22 announcements in 2023
- *Common courses*: Research Ethics (mandatory), Intro to PhD Studies, Teacher Training
- *All PhD positions are publicly announced – co-announcements are encouraged*

UPPSALA UNIVERSITET

* Since KoF17 and PhD evaluation 2020

Research infrastructures:

- The department has four local research infrastructure platforms for material research allowing development(manufacturing) and characterization of new materials:
  - Material physics laboratory:
  - Quantum material laboratory:
  - Helios facility:
  - Laser lab:
- The divisions run laboratories with equipment that are accessible to users

  Material researh is big users of the MSL clean room and Tandemlaboratory available at UU.

UPPSALA UNIVERSITET

Infrastructure for research infrastructure:

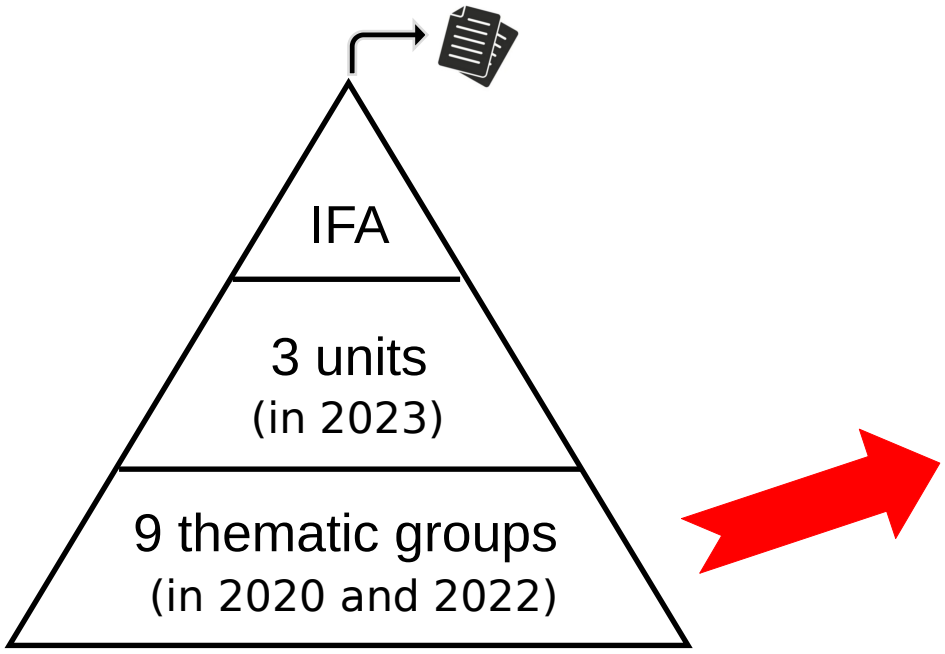
- The department uses and contributes to the development of large international infrastructure*. The department has two infrastructures specifically for this purpose:
  - **FREIA** - conducts research on beam physics and light generation with charged particles, accelerator technology and instrumentation
  - **Ångström Workshop** – Biggest university based machine workshop in northern Europe
- Uppsala is the main univerity in Sweden developing accelerators and instrumentation for large national and international research infrastructures. We have worked to get the work organized on national level (distributed laboratory/institute like NIKHEF)

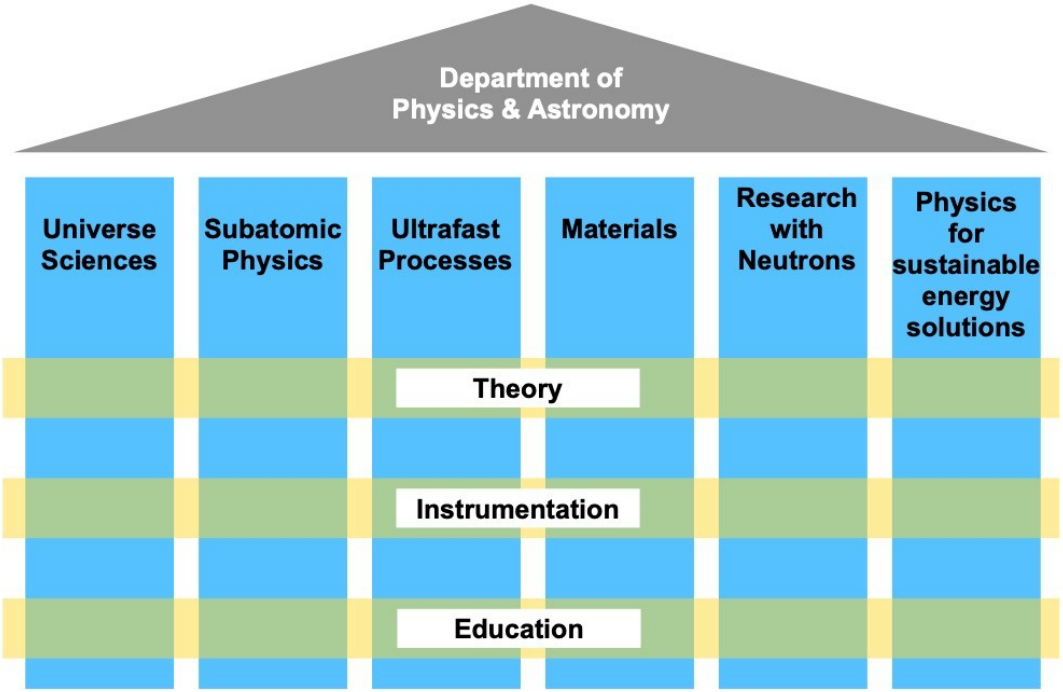
*) Full list in extra slides

UPPSALA UNIVERSITET

Department-wide strategy work on priorities :

The process was started as a folllow up on KoF17:





UPPSALA
UNIVERSITET

Department priorities :

- AI4Physics: Activity in progress with department money. Led by Magdalena Larfors
- Center for Geometry and Physics:from geometry to quantum information: Activity in progress with excellence grant from Swedish Science Council. Led by Tobias Ekholm (Math)
- ANItA- Academic-Industrial Nuclear technology Initiative to Achieve a sustainable energy future: Activity in progress with funding from Swedish Energy Agency. Led by Ane Håkansson who will be replace by Sophie Grape
- LigHt, an environment for multi-scale sharacterisation of (energy)materials at Ångströmlab: Activity started with funfing from KAW. Led by Andreas Lindblad and Daniel Primezhofer
- National laboratoty for instrumentation and accelerator development: Activity in preparation. Negotiation ongoing with Swedish Science Council.. Led by Richard Brenner
- Infrastructure support: Activity in progress with department money. Led by the department management group

UPPSALA
UNIVERSITET