Overview of Nuclear Physics in Norway

Joakim Nystrønand
University of Bergen
7 universities in Norway (Oslo, Bergen, Trondheim [NTNU], Tromsø, Stavanger, Agder, Ås [UMB])

Research in Nuclear Physics at two:

University of Oslo, University of Bergen

and at

Institute for Energy Technology (IFE) - Halden and Kjeller

and also a few smaller research groups at some University Colleges
Experimental Nuclear Physics - Relativistic Heavy-Ion Collisions with the ALICE experiment at LHC at CERN. Investigating nuclear matter under extreme conditions

Largest nuclear physics activity in Norway

- University of Bergen, 2 permanent staff: Dieter Röhrich, Joakim Nystrønnd

- University of Oslo, 1 permanent staff: Trine Tvetæ
  ⇒ Two professors (Løvhøiden, Skaali) retired 2008-2009, not yet replaced

- Bergen University College, 2 permanent staff
  Håvard Helstrøn, Kristin Hetland
Relativistic Heavy-Ion Collisions with ALICE

Financed through the CERN Programme of the Norwegian Research Council, jointly with particle physics (ATLAS).

ALICE has been under construction for ~15 years. Data taking started in November last year. First heavy-ion collisions expected in Nov-Dec 2010.

Main Norwegian contributions to construction:

- High-Level Trigger
- Photon Spectrometer (Hi.Res. EmCal)
Experimental Nuclear Physics - Low energy

University of Oslo, Oslo Cyclotron Laboratory

6 permanent staff (4 nucl. physics, 2 nucl. chemistry*)
Magne Guttormsen, Andreas Görgen, Per Hoff*, Jon Petter Omtvedt*, John Rekstad, Sunniva Siem

- Oslo Cyclotron Laboratory (OCL) built in 1979.

- p, d, $^3$He, $^4$He beams in the energy range 2-50 MeV.

- The main topic of nuclear physics at OCL is the investigation of level densities and radiative strength functions. These quantities are important for the understanding of thermodynamic and electromagnetic properties of the atomic nucleus.

- In parallel with basic nuclear physics and chemistry research, the cyclotron is used for the production of radioactive isotopes.

- Experiments at ISOLDE at CERN.
Experimental Nuclear Physics - Applied Nuclear Physics

Institute for Energy Technology (IFE)

IFE - Kjeller
- 330 employees, 100 in Nuclear Technology and Physics
- The JEEP II Research reactor, a national resource for material physics research and neutron irradiation technology.

OECD Halden Reactor Project (20 member countries)
- 260 employees, 150 in Nuclear Safety and Reliability
- International research program to improve the safety and reliability of nuclear power, and to ensure Norway's expertise in reactor technology.
Theoretical Nuclear Physics - High Energy

University of Bergen - 2 permanent staff
Laszlo Csernai, Csaba Andelik (Uni Research AS)
- Focus on relativistic heavy-ion collisions, relativistic statistical physics, relativistic fluid dynamics (NFR FRINAT Project 2006-2010).
- International collaboration with European (UiB Meltzer research project) and Chinese (NFR-NFSC project) groups.

University of Oslo - 1 permanent staff
Larissa Bravina
- Development of Monte Carlo models for heavy-ion collisions at RHIC, LHC, FAIR (NFR FRINAT Project).
- Collective flow in heavy-ion and pp collisions.
- International collaboration with several European and Russian research groups.
Theoretical Nuclear Physics - Low Energy

University of Bergen - 1 permanent staff
Jan Vaagen
- Radioactive Nuclear Beam Theory.
- Halo nuclei.
- Nuclear Energy.

University of Oslo - 1 permanent staff
Morten Hjort-Jensen
- Many-body theories for nuclear and solid state structure.
- Computational Physics.
- High performance computing.
Thank you!

More details in the following talks