

Particle Physics in Sweden



RECFA meeting in Uppsala

9/5 2008

Barbro Åsman

- *Three inquiries*
- *Particle Physics groups in Sweden*
- *LHC-K*
- *Nordic Cooperation*
- *The European Strategy and Sweden*

Three Inquiries

- *The Resources Inquiry*
- *Careers for quality*
- *Financing of Research - quality and relevance*



Universities

Number of universities & colleges in year 1477 was 1 in 1668 it was 2 in 1887 4 and now we have 61 or ~ 30 if one exclude art colleges etc.

Universities & colleges

With research	21
With research in Physics	12
With research in HEP	8



Consequences:

- *Basic 'faculty funding' decreased*
- *No professors with substantial resources*
- *External funding dominates budget, essential also for lecturer/professor salaries*
- *University overhead increased to $\geq 35\%$ of grants*
- *Decreased funding for basic 'pure' science*

Grounds for Distribution of Resources



- *Quality evaluations of research*
- *Field-normalised citations of international scientific production*
- *External funding*
- *Number of teachers with doctorates*
- *Number of women professors.*

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Careers for quality

OLD

Phd 4-5 years -> postdoc 2-5 years ->

Reaseach assistent 4 years ->

look for a job

NEW

PhD 4-5 years -> postdoc 2 years ->

Associate Senior Lecturer ->

can be promoted

Three Inquiries

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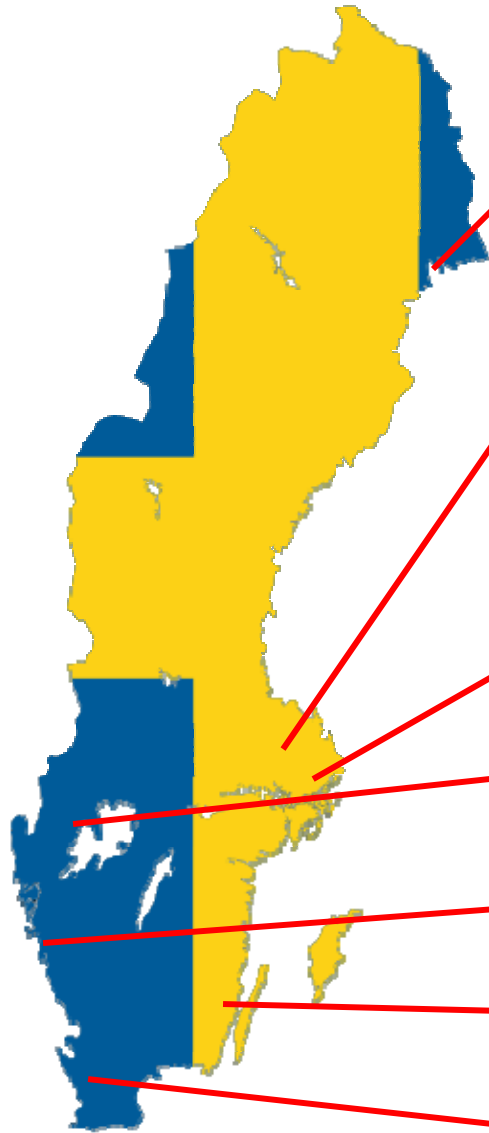


Sources for funding



- *Swedish Research Council:*
 - *investments, running costs, salaries*
- *Wallenberg foundation:*
 - *investments, large amounts at single occasions*
- *Swedish Space Board*
- *Vinnova : Research and innovation for Sustainable Growth*
- *Foundation for Strategic Research:*
 - *applied profile*

HEP groups / Activities / CERN-focused



Luleå University of Technology:
Theory: phenomenology (astro)

*Number of
group members*

5

Uppsala University:
Exp: Do/ATLAS, Amanda/Icecube,
Theory: phenomenology, strings...

18

25

Stockholm University:
Exp: Do/ATLAS, Amanda/Icecube
Theory: cosmology, astroparticle, strings

24

17

Royal Inst. of Technology:
Exp: Do/ATLAS, GLAST, Pamela, PoGO
Theory: phenomenology (neutrino)

Karlstad University: Theory: strings

6

Gothenburg Univ./Chalmers Inst.of Technology:
Theory: strings

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Kalmar College: Exp: GLAST

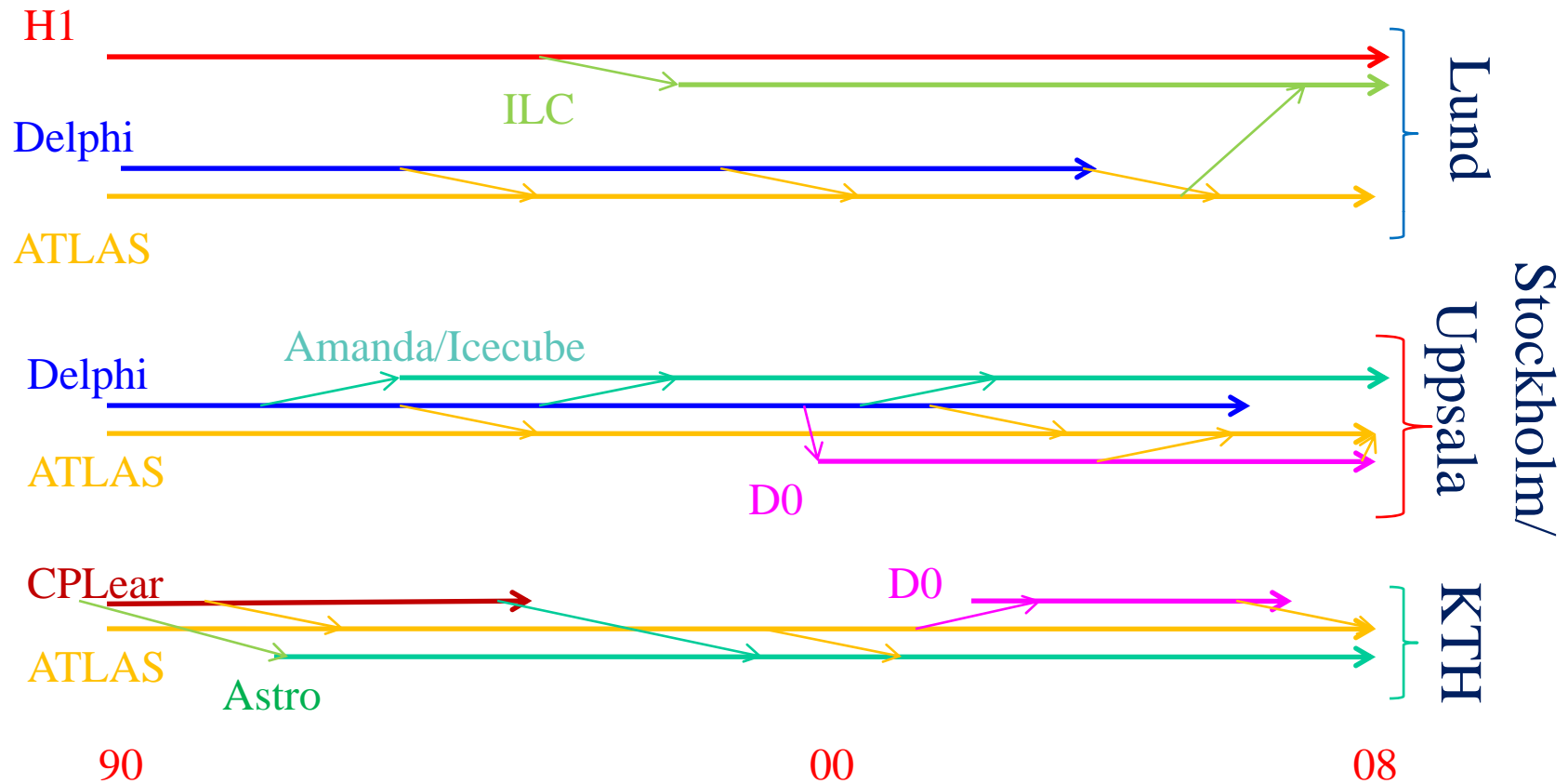
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Lund University:
Exp: Hi, ATLAS, PHENIX/ALICE
Theory: phenomenology

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Short History of the experimental HEP groups



Swedish LHC Consortium



In 1997, a **Swedish LHC Consortium , LHCK, was created, as a collegial organization (not governed by the Swedish Science Research Council).**

LHCK s Board consists of the PIs of the 5 groups involved:
Tord Ekelof/Uppsala U, Chair, Kerstin Jon-And /Stockholm U,
BengtLund-Jensen /StockholmKTH, PaulaEerola/ Lund U/ATLAS
Hans-Åke Gustafsson/Lund U/ALICE.

LHCK provides **national HEP planning and coordination and it has been quite successful in this since its start**



- In 1998 **LHCK** submitted to the Swedish SRC (VR) and the Wallenberg foundation (KAW) a **national plan for investments in ATLAS and ALICE instrumentation requesting in total ca 12,5Meuro**
The plan was accepted by VR.
- 1998-2004 **LHCK** delivered yearly detailed progress reports to VR.
- In 2003 **LHCK** submitted to VR and KAW a national plan for the development of a Swedish GRID with a Nordic Tier1 as a goal for the LHC Computing Grid(LCG). About 4 MEURO were requested to set up **national grid test bed, called SweGrid.**
The project was accepted by VR and KAW.
Grid nodes were installed at each of the six Swedish national computer centers.
SweGrid was very successfull.
- In 2007 **LHCK** requested and obtained ca 2.4Meuro for **dedicated Swedish LCG equipment and services which are currently coming into operation.**
- In 2008 **ca 4.6Meuro have been requested by LHC for LHC Grid equipment and services for the period 2009-2011.**
- In 2006 VR provide a **separate yearly operations budget for collider based High Energy Physics in Sweden of ca 1.8 MEuros**
LHCK to provides recommendations , based on applications from individual consortium members and on external peer reviews



LHCK has successfully pioneer the introduction in Sweden of **Open Access publication in collaboration with the National Library of Sweden.**

LHCK invited the **Swedish Minister of Research to CERN, he made a on 10 March 2008.**

LHCK is represented in a number of bodies of strategic interest such as;
**the Board and the Strategic Technical Committee of the Swedish Infrastructure for Computing (SNIC),
the CERN Committee of the Nordic Data GridFacilty(NDGF),
the ATLAS, ALICE and Computing Resource Review Boards (RRBs)
the LCG Overview Board at CERN.**



There is no Swedish HEP laboratory for national coordination and provision of technical infrastructure (like e.g. NIKHEF in Holland). However, the Swedish LHC Consortium has successfully provided national coordination on a collegial basis. Maybe, in some future, a national technical infrastructure for instrumentation construction could also be created, as would be very useful for e.g. the LHC upgrade and technical work for future linearcolliders. But this remains to be seen.

LHC and Beyond

*Collaboration project under the NordForsk scheme
"Joint Nordic Use of Research Infrastructures"*

- *to strengthen and optimize the Nordic participation in the LHC experiments,*
 - *to promote co-operation and sharing of best practices between the Nordic research partners, including using the Nordic Data Grid Facility (NDGF) for analysis of the LHC data,*
 - *to optimize joint Nordic R&D for the future generation of particle physics experiments,*
 - *to prepare for joint infrastructure applications for the European Union (EU).*
- *Funded by NordForsk 2008-2010 (1 MNOK).*



norden

NordForsk

Work plan

- *Operation mode of the project:*
 - *workshops,*
 - *student training courses,*
 - *mobility.*

Webpage: www.hep.lu.se/staff/eerola/LHCBeoynd.htm

Project coordinator: P. Eerola,

Lund University, Sweden

Groups Involved

Nordita (theory)

SE: *Lund U. (ATLAS, ALICE and theory),*
.
.
Uppsala U. (ATLAS and theory),
.
Stockholm U. (ATLAS) and KTH (ATLAS).

NO: *Univ. Oslo (ATLAS and ALICE),*
.
Univ. Bergen (ATLAS, ALICE and theory)
.
Bergen Univ. College (ALICE).

DK: *Niels Bohr Institute (ATLAS and ALICE),*
.
Univ. Southern Denmark (theory).

FI: *Univ. Helsinki and Helsinki Inst. of Physics*
(CMS, TOTEM theory),
.
Univ. Jyväskylä (ALICE).

Russia: *St. Petersburg State University (ALICE).*

Estonia: *National Institute of Chemical Physics and Biophysics*
in Tallinn (CMS and theory).

