

# **In-service Training Programs for Physics Teachers in Finland**

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# Organized by:

## 1. Physics departments of universities

**HIP** is a physics research institute of Helsinki, Aalto, Jyväskylä, Lappeenranta and Tampere university

- Programs of the Luma(sience) centres, 10 learning centres
- 1 week in-service training courses during the summer holiday
- 1-2 days programs
- Higgs exhibition in Heureka (Science centre) Autumn 2014

## Luma centres



## **2. Finnish Association for Teachers of Mathematics, Physics, Chemistry and Informatics MAOL ry**

36 local member organisations all around Finland

- Weekend training, 3 times per a year, state level training
- Other training courses,
  - e.g. Masterclasses for physics teachers, spring 2014, state level training
  - Many visits and learning circles on the local level

## **3. Finnish National Board of Education**

- Funding for educational projects
- In-service training for Physics Teachers

## 4. CERN Co-operation Networks for Schools in Finland (part of HIP activities)



Picture, Michael Hoch

# Structure of two CERN co-operation networks for schools in Finland

## Co-operation network for Finnish speaking schools

- Physics teacher program, 5 days at Cern, 2001-, *320 teachers*
- School principal and tutor program, 2 days at Cern, 2004-, *70 teachers*
- 1 day visits to Cern, *80 teachers*
- Student program, 3 days at Cern, 2000-, *3500 participants, including also 210 physics teachers who have not participated to the teacher programs above.*

## Co-operation network for Swedish speaking schools

- Physics teachers, principals and tutors participate to the Finnish speaking network program
- Student program 2 days at Cern, 2005-, *400 participants*

**Until now 680 teachers have studied at CERN**



# Cities of participating schools



The School Networks are open

Program is very popular

**Involving 75%**  
of high schools

**Less than 60%**  
of applying local school  
networks can be selected  
annually to study at CERN

# High-lights

- **Two CERN Co-operation Networks for Schools in Finland** (Finnish and Swedish speaking), since 2000
  - Involving 75% of high schools and more than 50 partners,
  - In-service training for teachers and students at CERN
  - 500 articles and interviews in more than 150 different media
- \* **New status for physics teaching in high schools**
  - New optional physics courses and science learning programs,
  - Motivate, deepen, expand and set objectives
  - Inspiring teachers starting new programs
    - 14 new international science learning projects and 3 national projects by using the same learning model
- \* **Positive impact to school development in general**
  - The CERN Co-operation Networks have made schools
    - equal, well-known and more attractive
  - Teachers' work has become more rewarding

\* Source: Written feedback from participating teachers

# CERN Impact to Physics Teaching in High Schools in Finland

## 1. Open for high school students

- Science and research centers in Finland and other countries
- Universities

## 2. Inspire and activate physics teachers

## 3. Create co-operation networks between local high schools

## 4. Create new optional physics courses, for example

- **Science learning course**, (or CERN-course.. ), open for all physics students or only for students coming to CERN
  - Coaching for science learning at CERN,
  - Students written theses about CERN research,
  - Students oral presentations and written articles in newspapers,
  - Common e-course between schools belonging the same local network,
  - Visits to research centers, universities, enterprises etc. in Finland
  - Researcher visits to schools etc.