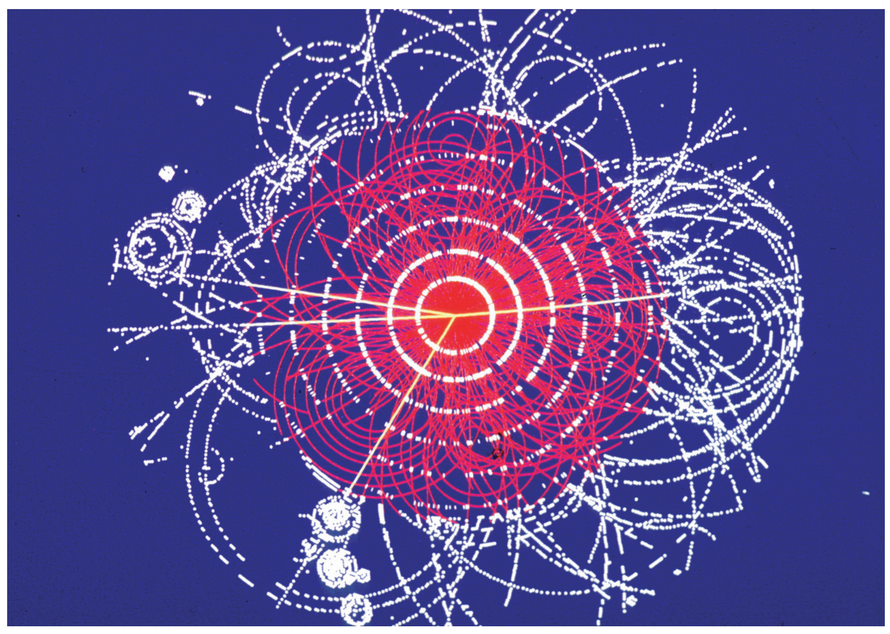
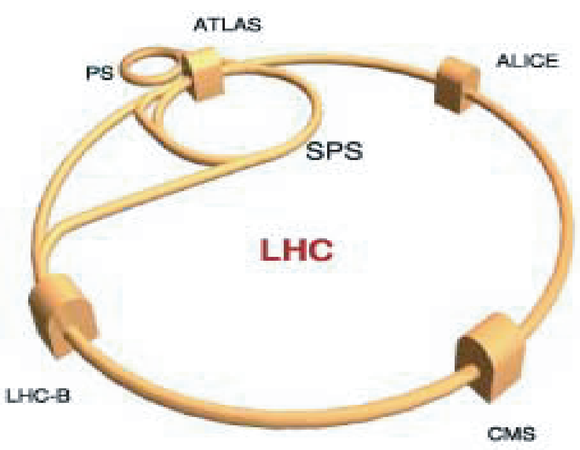
Nordic network "Discovery Physics at the LHC"

Secrets of matter and universe



With particle accelerators we can re-create in laboratory the conditions which prevailed moments after the Big Bang.

In this network we will explore the physics spectrum of the world's most powerful accelerator,the Large Hadron Collider (LHC).



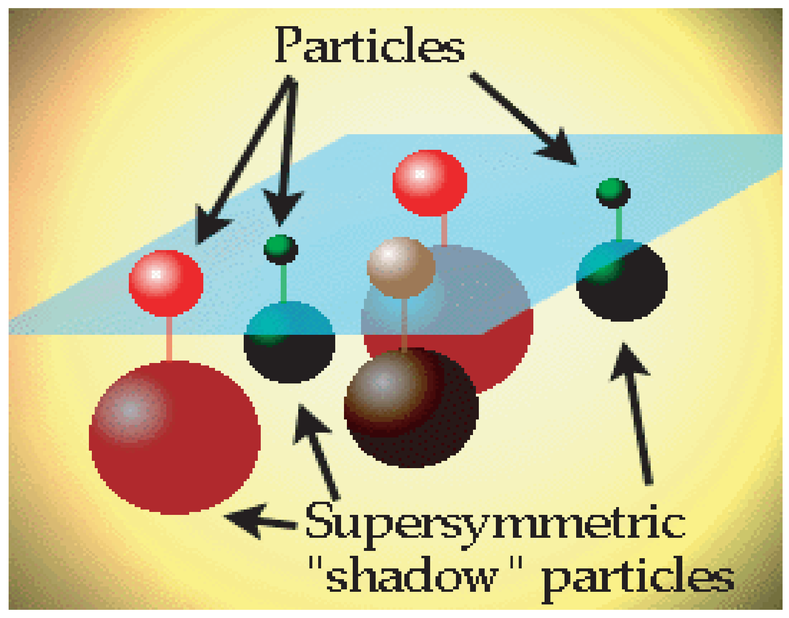
New energy frontier

The LHC will collide protons at each other. Located at CERN, Geneva. Start operation in 2006.

The total collision energy, 14 TeV, corresponds to the energy density of the Universe when it was about 1/1000000000000000 seconds old.

New physics phenomena at TeV energy: answers to fundamental questions

-> How particles get masses: Higgs bosons, observable at LHC if mass < 1 TeV
-> How forces can be unified: supersymmetry (SUSY) – signature is supersymmetric particles
->Quantum gravity: extra dimensions – signature is gravitons



Network Research Programme

Work proceeds in the working groups:
-> SUSY scenarios, investigation of new decays
-> Extra dimensions and other new models
-> Higgs sector
-> CP violation in B decays, rare B decays, top decays,...

Network interactions

Network workshops are held twice a year, including training courses for students
-> March 2001 Oslo, course on Higgses
-> Nov 2001 Stockholm, course on SUSY

Exchange of research students
-> during 2001 NBI-Lund, Stockholm-Bergen

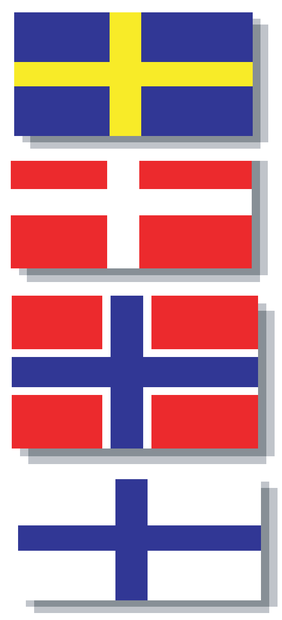
Network Participants

Lund U P Eerola (coordinator), T Åkesson, O Smirnova, T Sjöstrand, H Bijnens, M Maul
Stockholm U S Hellman, K Jon-And, A Lipniacka **KTH** B Lund-Jensen **Uppsala U** T Ekelöf

Niels Bohr Institute J Renner Hansen, J Dines Hansen **NORDITA** K Kainulainen, P Di Vecchia

Bergen U P Osland, G Eigen, B Stugu **Oslo U** S Stapnes, L Bugge, A Read, F Ould-Saada

Helsinki Institute of Physics K Huitu, R Kinnunen, J Maalampi



Network home page www.nordita.dk/~kainulai/nordic-network/