Research in high energy physics, primarily concerning the ILC

Why do the quarks and leptons, as well as the W and Z bosons, have non-zero mass while photons remain massless? What is the nature of the missing mass that provides the gravitational binding necessary to explain the stability of galaxies? Do supersymmetric particles exist, and does supersymmetry unify the fundamental forces at the highest energy scales?

We hope to learn the answers to some of these questions through results from experiments to be performed at the Large Hadron Collider, nearing completion at CERN in Geneva, Switzerland.

The International Linear Collider has similar physics goals, but its electron-positron collisions are expected to allow precision measurements that cannot be performed at the LHC, and are needed to understand more fully the nature of "electroweak symmetry breaking," the properties of the Higgs boson(s), and the characteristics of supersymmetric particles, should they exist.

The ILC will be a challenging machine to design and build. Its initial version will accelerate beams of electrons and positrons to an energy of 250 GeV and focus these beams to a thickness comparable to the size of a hemoglobin molecule. The focused beams will collide head-on after each travels through a fifteen kilometer linear accelerator built from superconducting niobium that has been cooled to within two degrees of absolute zero.

Enormous detectors will measure the momenta and energies of the
Roadtrip! UIUC ILC Research Group Visit to Fermi National Accelerator Laboratory and Argonne National Laboratory

- George Gollin
- AØ beamline simulation
- Tests at AØ of a stripline kicker

- Mike Haney
- Initial Studies into the Design of an Axion Cannon

- Mike Kasten
- Overview of ATCA Shelf, Shelf Manager, Blades and IPMC Organization

- Jason Chang
- Studies of the I²C Shelf Manager

- Perry Chodash
- Physics and ATCA

- Michael Davidsaver
- An Introduction to OpenClovis

- Will Dluger
- Alex Lang
- Yehan Liu
More information

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This material is based upon work supported by the National Science Foundation under Grant No. PHY03-49179, the Department of Energy under Grant Nos. 64377, 56840, 80780, 561096, DEFG02-03ER41281, and DEFG02-91ER40677, and by the University of Illinois at Urbana-Champaign's Office of the Vice Chancellor for Research.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation or Department of Energy.