

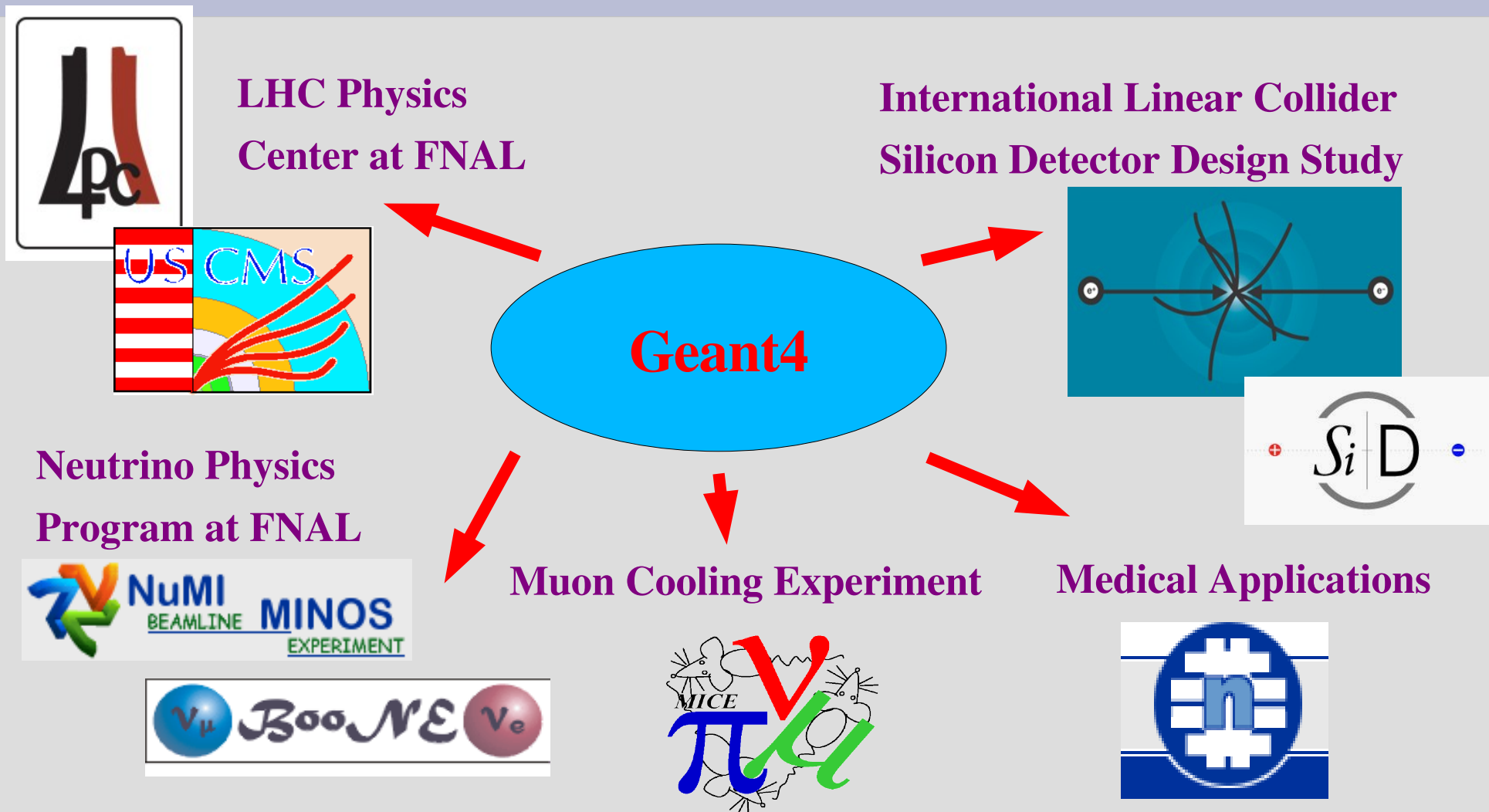
Geant4 Support at FNAL

Julia Yarba

CD Project Status Meeting on Simulation

September 26, 2006

Geant4 Users at Fermilab : fast growing community



Geant4 Users Support at FNAL

- **Within FNAL/CD-PSM Group – Detector Simulation support : Daniel Elvira, Julia Yarba to support both Geant4 releases and experiment/projects**
- **Many Geant4 users at FNAL are first-time users**
 - “personalized” approach needed
- **Some requests require expertise with the Geant4 core code**
 - we have to rely on our contacts with Geant4 team
- **The number of Geant4 users at FNAL grows very fast – hopefully, the group is to grow, too !**

Geant4 Users Support at FNAL (cont.)

- **Releases :**
 - follow Geant4 release schedule as close as possible
 - support on SL3 platform; considering support on SL4
 - available in UPS/UPD and on FNALU cluster
- **Communications with users :**
 - invite users to visit <http://cepa.fnal.gov/psm/geant4> for important news and “baby-steps instructions”
 - encourage users to subscribe to geant4-users@fnal.gov for releases, events, questions, sharing experience
 - appointments to talk face-to-face
 - Busy summer : students, increase of ILC sim.activity...
 - In FY2006, on the order of 100 requests from ALL areas

Geant4 Users Support at FNAL (cont.)

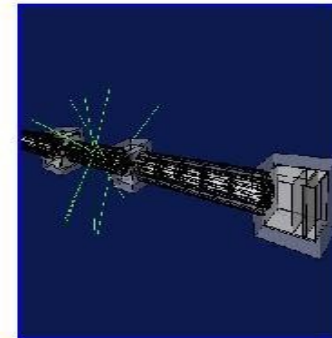
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Geant4 at Fermilab

What is Geant4?

Geant4 is a toolkit for the modelling of the passage of particles through matter. It is a successor of the Geant3 simulation package, that has been world-standard toolkit for the HEP detector simulation since early 1980's and throughout modern days. Geant4 is one of the first successful attempts to re-design a major package of HEP software for the next generation of experiments using an Object-Oriented environment. The toolkit is being designed, developed and maintained by an international collaboration formed by individuals from a number of cooperating institutes, HEP experiments, and universities. Its headquarter is located at CERN. You can visit Geant4 Homepage :



- [Geant4 Home Page \(CERN\)](#)

The Geant4 application areas include high energy physics and nuclear experiments, medical, accelerator and space physics. In particular, the toolkit has recently become very popular among [experiments and project at Fermilab](#).

The Computing Division CEPA-PSM group offers through these pages a set of hands-on instructions and tips for getting started in the use of Geant4 at Fermilab, as well as useful links to projects, documents, and related web sites.

To keep up with the latest news on Geant4 or to submit questions, we strongly suggest use of the geant4-users@fnal.gov mailing list. To subscribe to the list, please follow the link below :

- [Subscribe to geant4-users at Fermilab](#)

News and Links to Useful Geant4 Resources

- [Latest Geant4 release at Fermilab](#)
- [Previous Geant4 releases at Fermilab](#)
- [Geant4 Collaboration News](#) (upper right corner)
- [HyperNews \(SLAC\) : FAQ, Discussions, etc.](#)

How-To's for Geant4 Beginners at Fermilab

- [Latest official release](#)
- [Versions available at Fermilab](#)
- [Setup a version](#)
- [Find Release Notes](#)
- [Related version of CLHEP](#)
- [Find examples](#)
- [Run exampleN01](#)
- [Run exampleN02 with OpenGL](#)
- [Other tips](#)
- [Setup shell script examples](#)

releases,
events,
questions,
answers...

baby-steps
and more...

Contacts with Geant4 Developers

- **Maintain working contacts with Geant4 developers (e-mails, phone,...)**
- **From CMS : identified & reported several critical cases of numerical instability in the Geant4 core code (NaN generation, sending user application into infinite loop) – fixed in release 4.8.1.p01**
- **Evaluation of physics performance vs CPU in the latests release 4.8.1.p01 – in contacts with Geant4 developers and simulation experts from ATLAS (i.e. LCG AA effort)**

Summary

- **The Geant4 use in FNAL experiments and projects has picked up several years ago and is rapidly growing**
- **The community of the Geant4 users at and around FNAL includes many young physicists and students, with little or no experience in the area of detector simulation**
- **Help to users requires “personalized” approach**
- **Manpower for Geant4 support is limited - we work hard**
- **Creating web-based instructions for Geant4 users and encouraging the use of mailing list allows efficient education/support**
- **We coordinate activity with Geant4 developers and hope that our input will help Geant4 community**