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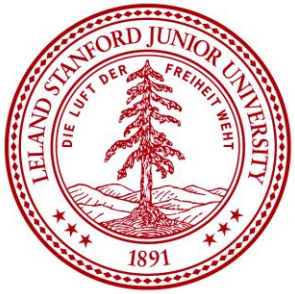


Geant4 Tutorial Course at Dakar

Symposium in High Energy Physics for the Mediterranean and Africa

May 25-26, 2010 @ LLR

Makoto ASAI
PPA/SCA
SLAC National Accelerator Laboratory

Geant 4

http://www.jlab.org/~gueye/Geant4/2009/

IRIS-Geant4 Tutorial Series

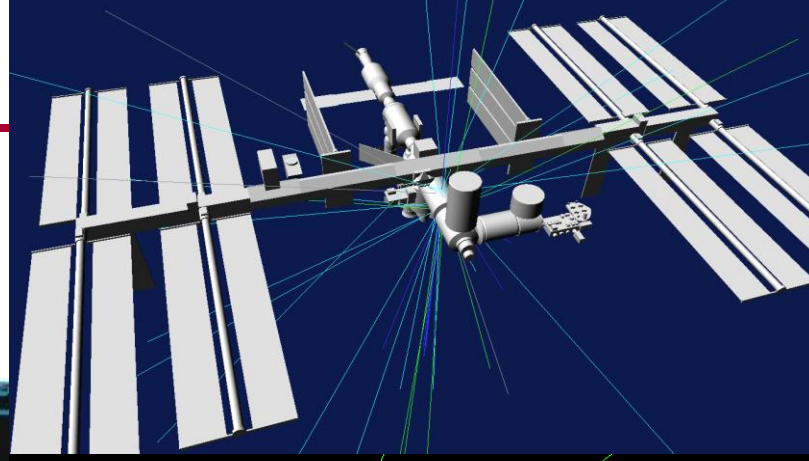
2009 Geant4 Tutorial - Dakar, Senegal
November 14-18, 2009

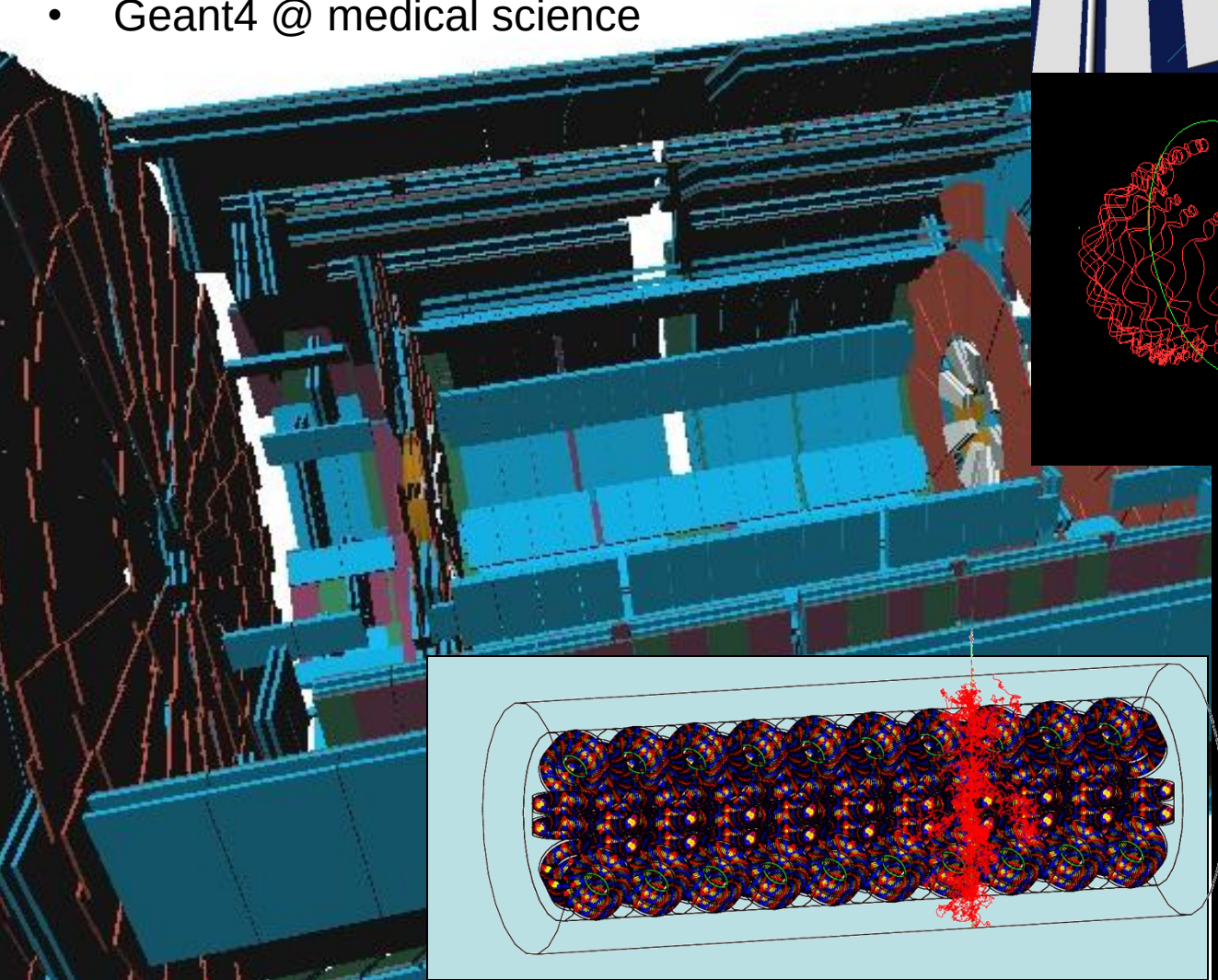
The Geant4 simulation toolkit allows simulating the interaction of particles passing through matter. Originally developed for high energy physics, the toolkit has now found applications in areas such as space science, material science, and medical physics, to name a few. Geant4 has an extremely high coding flexibility and encompasses a series of physical models to describe all electromagnetic and hadronic interactions from a few eV to the TeV regime. It also supersedes most of its competitors in the market as being a freely available open source tool that provides powerful geometries handling and visualization tools. The tutorial in Dakar, Senegal, will not only consist of the first ever to be housed on the African continent, but will also be the first of a series aimed at developing a local expertise to launch new research areas in the field of Monte Carlo simulations for African scientists using the Geant4 toolkit. The primary targets of this tutorial are faculty, junior and senior researchers from African universities and research centers that are novice or expert in the use of the Geant4 toolkit. The course will provide basic and semi-advanced knowledge on the use of the toolkit and some of its applications (nuclear and particle physics, accelerator physics, biomedical physics, and grid). The tutorial is limited to a maximum of 30 participants.

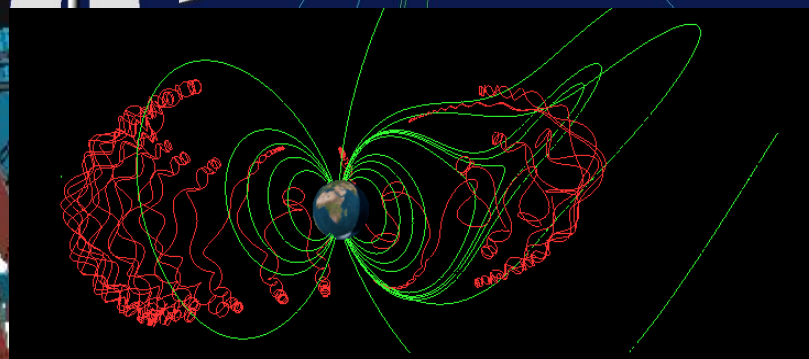
Participants are expected to install the latest version of Geant4 (9.2.p02) prior to attending the tutorial. Information on how to install this toolkit on various platforms can be found here.

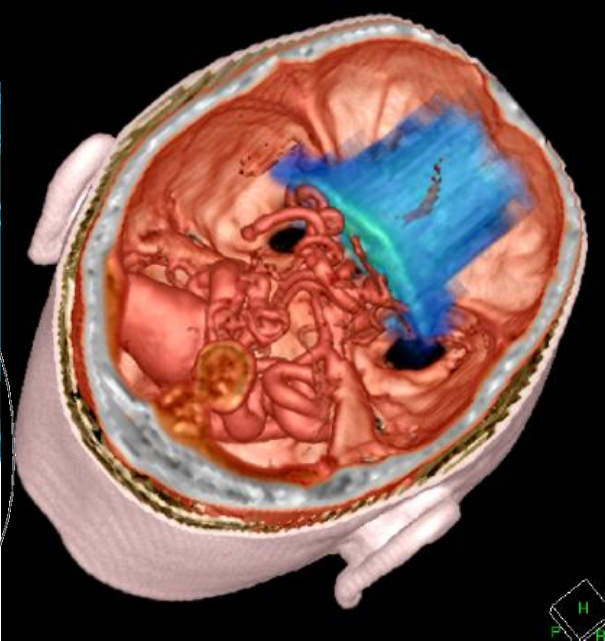
Brief Introduction to Geant4

- What is Geant4
- Geant4 @ high energy and nuclear physics
- Geant4 @ space science
- Geant4 @ medical science



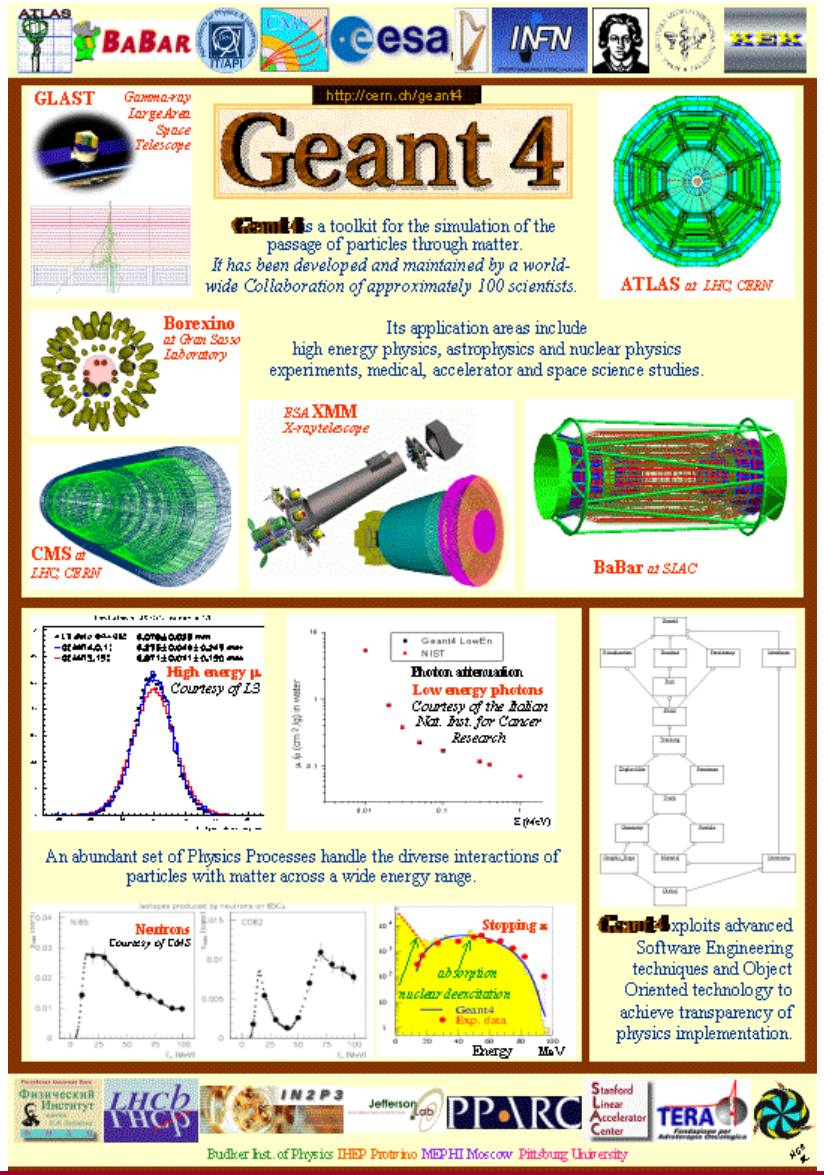




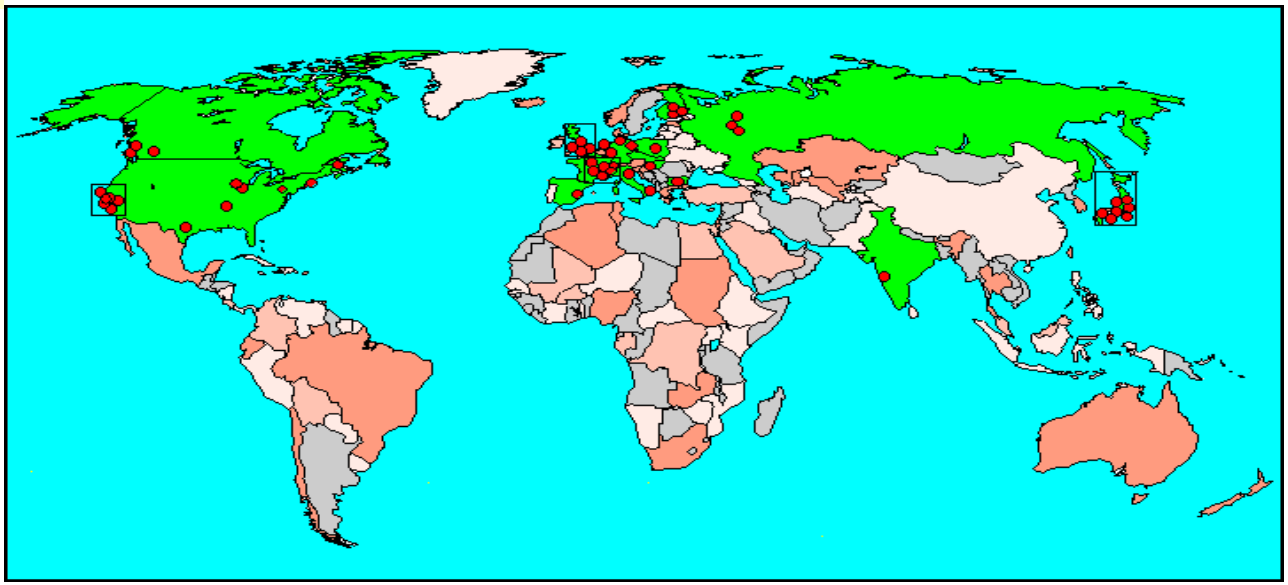


What is Geant4

- Geant4 is a toolkit for the simulation of the passage of particles through matter. Its areas of application include high energy, nuclear and accelerator physics, as well as studies in medical and space science.
- Geant4 offers most, if not all, of the functionalities required for the simulation of elementary particle and nucleus passing through and interacting with matter.
  - Kernel
  - Geometry and navigation
  - Physics processes
  - Scoring
  - GUI and Visualization drivers
- Extensive user guide documents and examples are provided.



Geant4 Collaboration



TRIUMF

Lebedev

J.W.Goethe Universität

Collaborators also from non-member institutions, including
Budker Inst. of Physics
IHEP Protvino
MEPHI Moscow
Pittsburg University

http://www.geant4.org/

Geant 4

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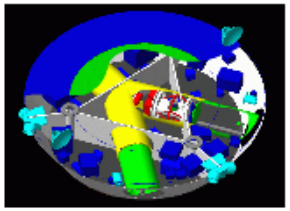
Geant4 is a toolkit for the simulation of the passage of particles through matter. Its areas of application include high energy, nuclear and accelerator physics, as well as studies in medical and space science. The two main reference papers for Geant4 are published in *Nuclear Instruments and Methods in Physics Research* A 506 (2003) 250-303, and *IEEE Transactions on Nuclear Science* 53 No. 1 (2006) 270-278.

Applications

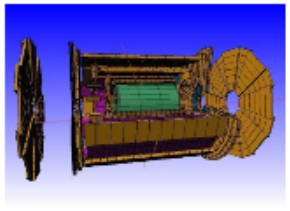
A sampling of applications, technology transfer and other uses of Geant4

User Support



Getting started, guides and information for users and developers

Results & Publications



Validation of Geant4, results from experiments and publications

Collaboration

Who we are: collaborating institutions, members, organization and legal information

News

- *22 April 2010* - **Patch-01** to **release 9.3** is available from the download area.
- *16 March 2010* - 2010 planned developments.
- *19 February 2010* - **Patch-03** to **release 9.2** is available from the archive download area.

Events

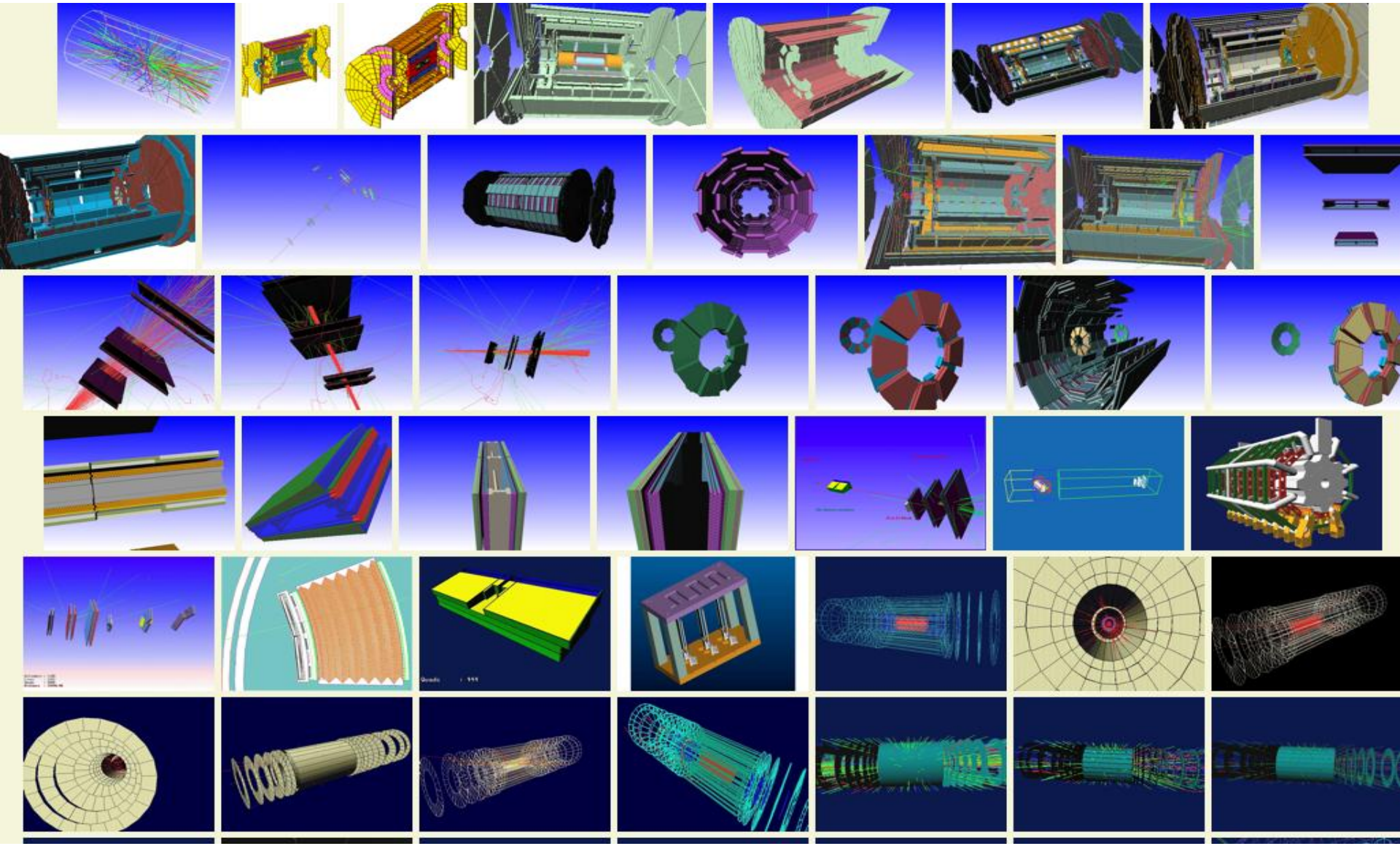
- Geant4 Tutorial Course, FCFM-BUAP, Puebla (Mexico), **14-18 June 2010**.
- 7th Geant4 Space Users' Workshop, Seattle (USA), **18-20 August 2010**.
- 3rd Monte Carlo Conference, MC2010, Hitotsubashi Memorial Hall, Tokyo (Japan), **17-20 October 2010**.
- **Past events**

Applications | User Support | Results & Publications | Collaboration | Site Map

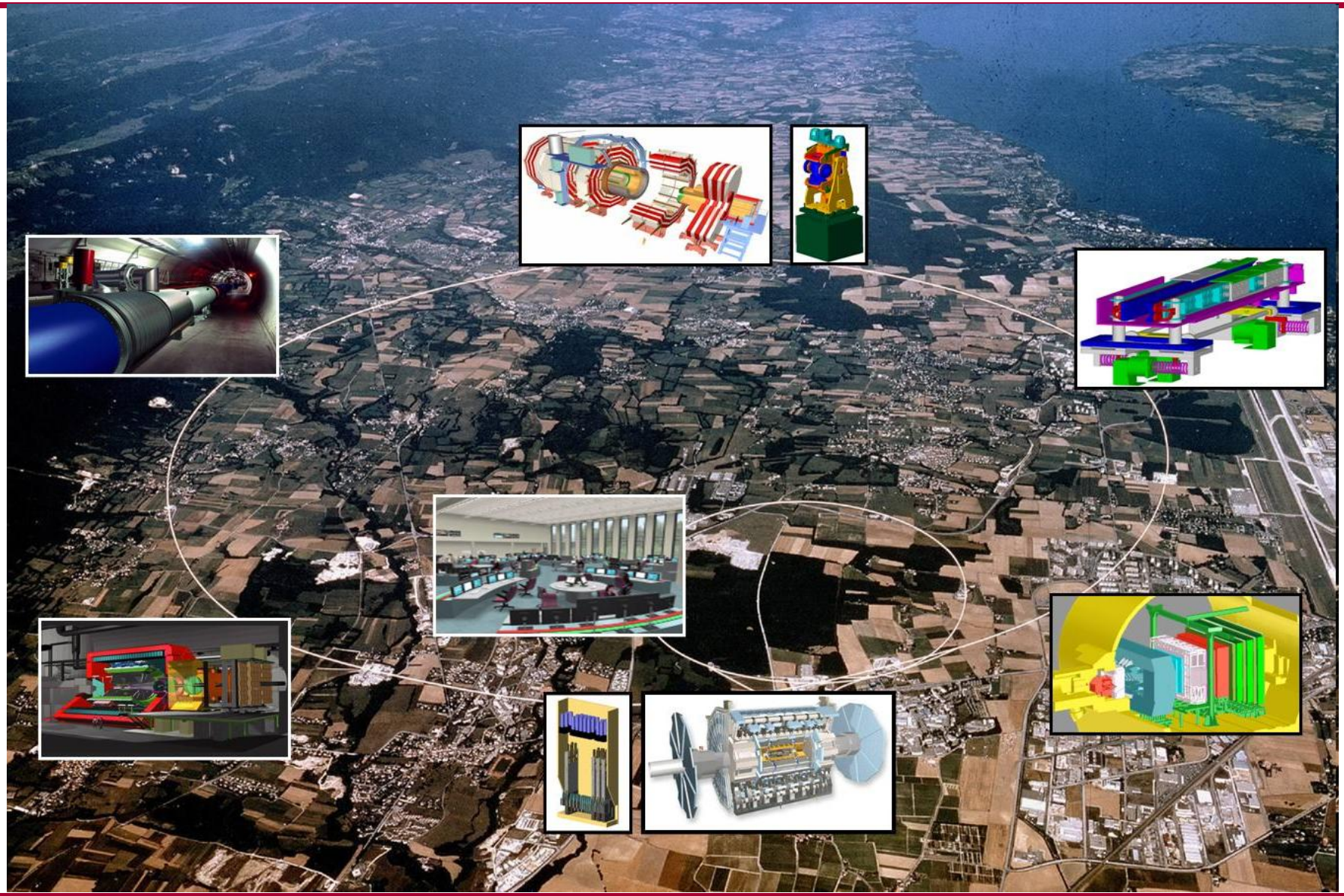
Contact Webmaster

Last updated: 14 May 2010

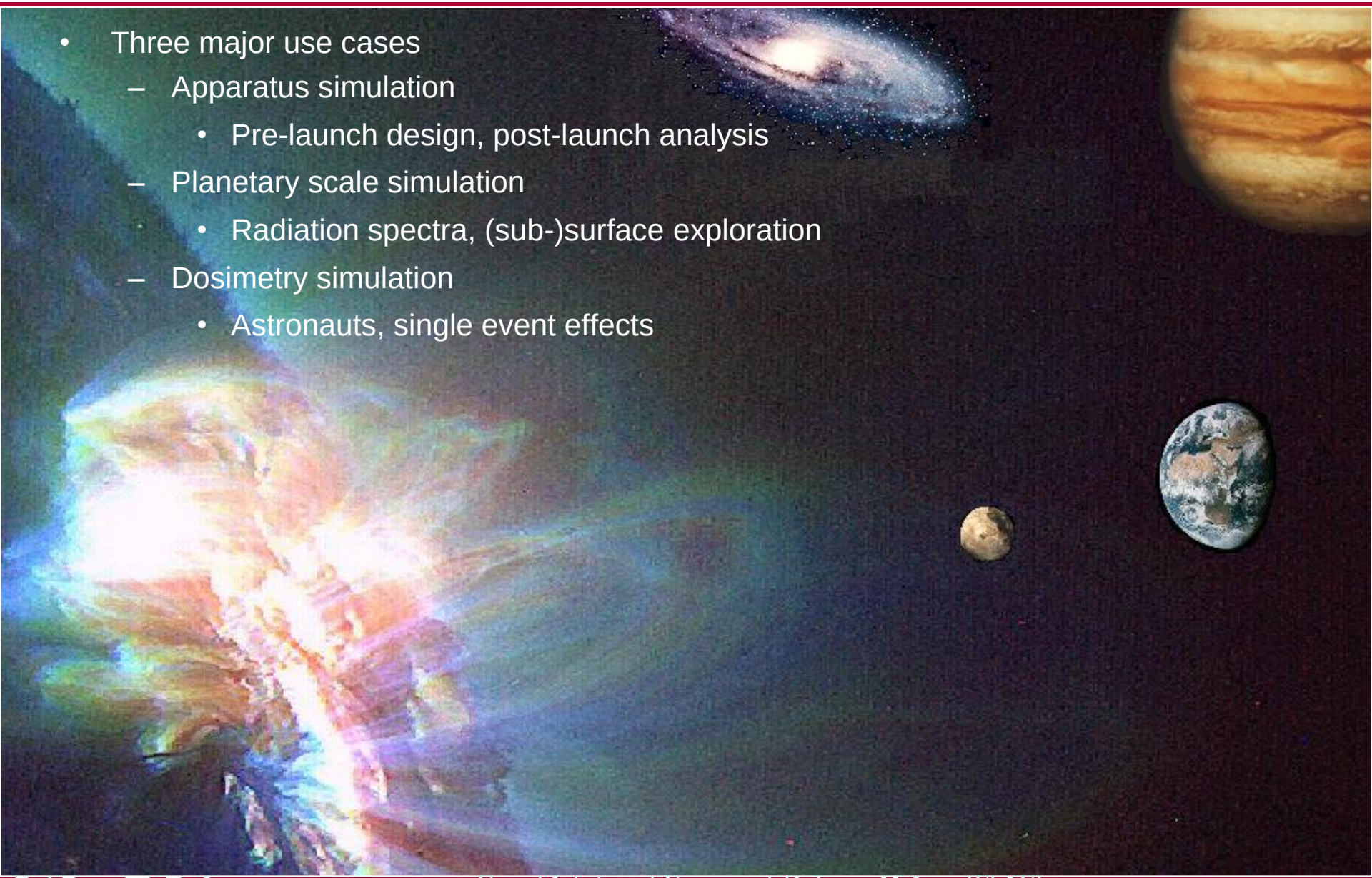
Geant4 @ High Energy and Nuclear Physics



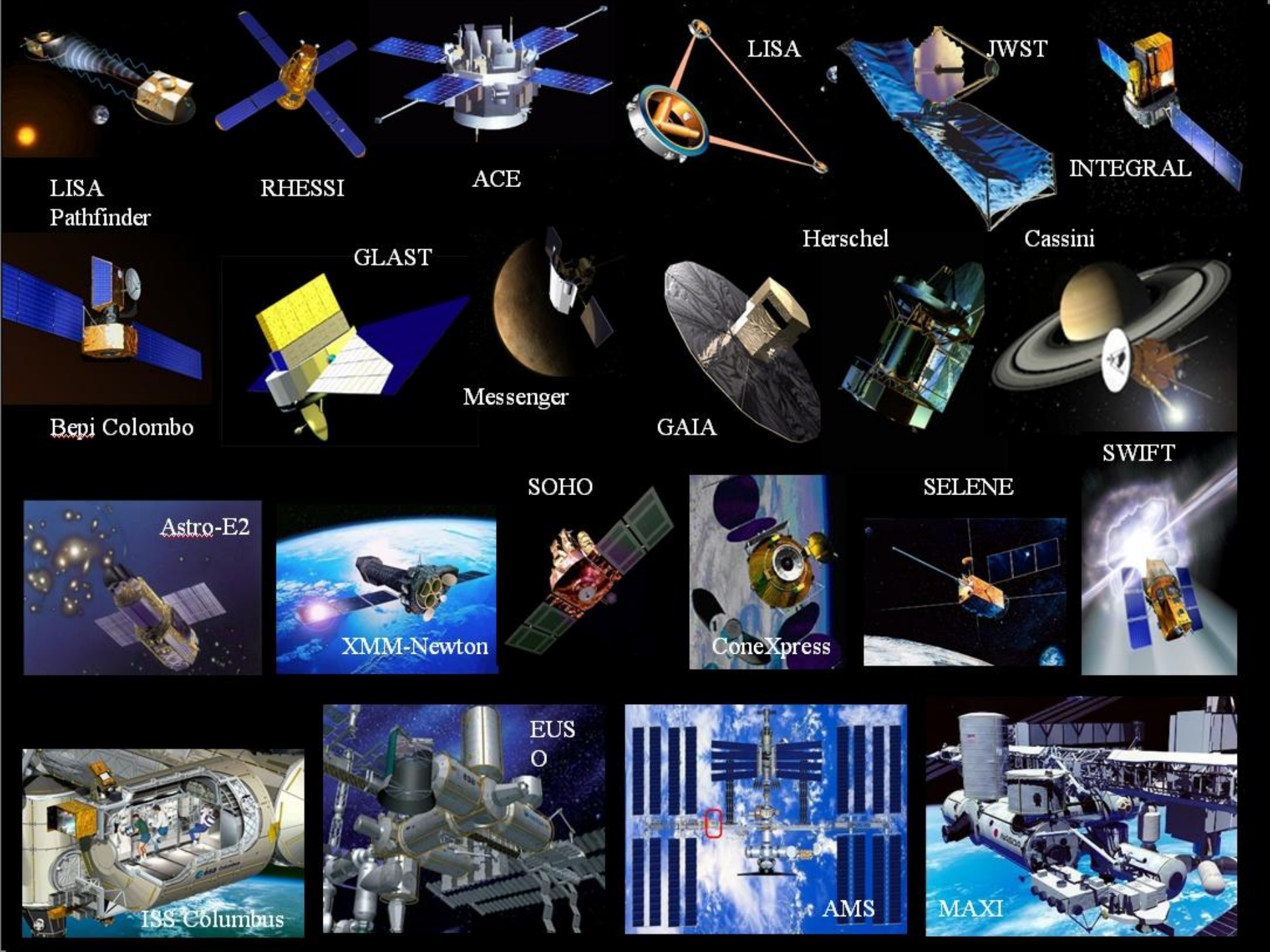
Large Hadron Collider (LHC) @ CERN



Geant4 @ Space Science



- Three major use cases
  - Apparatus simulation
    - Pre-launch design, post-launch analysis
  - Planetary scale simulation
    - Radiation spectra, (sub-)surface exploration
  - Dosimetry simulation
    - Astronauts, single event effects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Pathfinder
RHESSI
ACE
LISA
JWST
INTEGRAL
Bepi Colombo
GLAST
Messenger
Herschel
Cassini
GAIA
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SOHO
SELENE
Astro-E2
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AMS
MAXI

http://creme-mc.isde.vanderbilt.edu/

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news

User Groups
Apr 28, 2010

WARNING: creme96 flux 'flare' module
Apr 28, 2010

Bulk upload of files
Apr 15, 2010

Plotting Creme96 Data Files
Oct 16, 2009

Change in PDF handling
Oct 09, 2009

More news...

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Welcome to CRÈME-MC

Contributors: Brian Sierawski, Marcus Mendenhall

It has been almost a decade since the introduction of CREME96, the current state-of-the art tool for SEE rate prediction. CREME96 uses phenomenological models to predict SEE rates. These models were based on two assumptions. First it was assumed that the ionization trail left by the particle was much narrower than the minimum feature size in the microelectronic circuits. Second, it was assumed that the SEE sensitivity of individual microcircuits could be idealized as being due to a single sensitive junction. The cross section of this junction versus the linear energy transfer (LET) rate of the ionizing particle could then be measured and used to estimate the SEE rate. Since CREME96 was developed the minimum feature size has shrunk by more than a factor of 100. As a result, the interaction between track microstructure and device characteristics can no longer be ignored. This assumption in CREME96 has been shown to have significant shortcomings when applied to new and emerging technologies like advanced CMOS, SiGe HBTs, photodiodes, and IR FPAs. The solution is to replace current models in CREME96 with a physics-based model that correctly accounts for the distribution of energy deposition about the track and the possible existence of multiple sensitive junctions in each microcircuit.

The need for a comprehensive and extensible complement to CREME96 that is widely accessible is now apparent. The approach chosen for this new SEE model is modular, uses standardized or widely-adopted computer languages, and is based on a core of open-source material, the Geant4 Libraries, for the basic radiation-computation engine. This core Monte Carlo engine can be supplemented in an extensible way with specific models relevant to new technologies, as these models are developed.

CRÈME-MC Technology

Overview & references to Geant4 Documentation

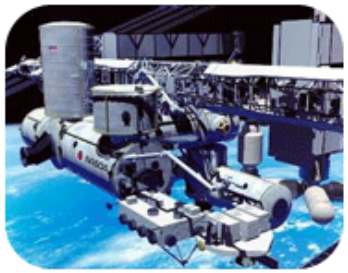
The site is built on Plone, which is a very versatile content-management system written in Python.

The graphics for the site are generated using the very nice Grace plotting package, which is open source, free, and very well debugged. It produces high-quality PDF output. Users are encouraged to download this package so they can directly manipulate the Grace files from the site, rather than reverting to the CSV files, and having to reformat the plots. Note that Grace is excellent for publication plotting, since it is capable of saving style files, allowing one to format all graphs for a paper

http://active.boeing.com/events/GEANT4/

Geant 4

BOEING



Geant4 Space Users Workshop 2010

Conference Name:GEANT4 Space Users Workshop
Dates: Wednesday August 18 - Friday August 20, 2010
Location: Hilton Hotel Seattle Downtown, Seattle, WA
Point of Contact:Makoto Asai

Geant4 Space Users' Workshop –**G4SUWS**– is focused on new results on space radiation interaction with components, sensors and shielding analysis, as well as on Geant4-based tools and developments applicable to any Space mission. The workshop includes some working sessions and open discussions for topical collaborative efforts and for future plans.

The Geant4 particle transport toolkit is jointly developed by a world-wide Collaboration and is intended for a wide range of applications in HEP, medical field, and space physics and engineering. In recent years, space and astrophysics has become a significant user domain, with applications ranging from instrument and detector response verification to space radiation shielding optimization, component effects, support of scientific studies, and analysis of biological effects. The various domains include:

- Space electronics and Space Science detector systems.
- Single Event Effect analysis tools such as CRÈME-MC
- Simulations of astronaut radiation hazards.
- Planetary exploration applications.
- Interfaces and tools to space environment analysis tools such as SPENVIS.
- Cosmic ray magnetospheric propagation analysis.
- Microdosimetry.
- Large-scale simulations requiring event biasing and GRID capabilities.
- General shielding optimization applications.

This 7th GEANT4 Space Users' workshop follows events organized at

Home

Important Dates

Scientific Program

Abstract Submission

Social Events

Registration

Accomodation & Travel Info

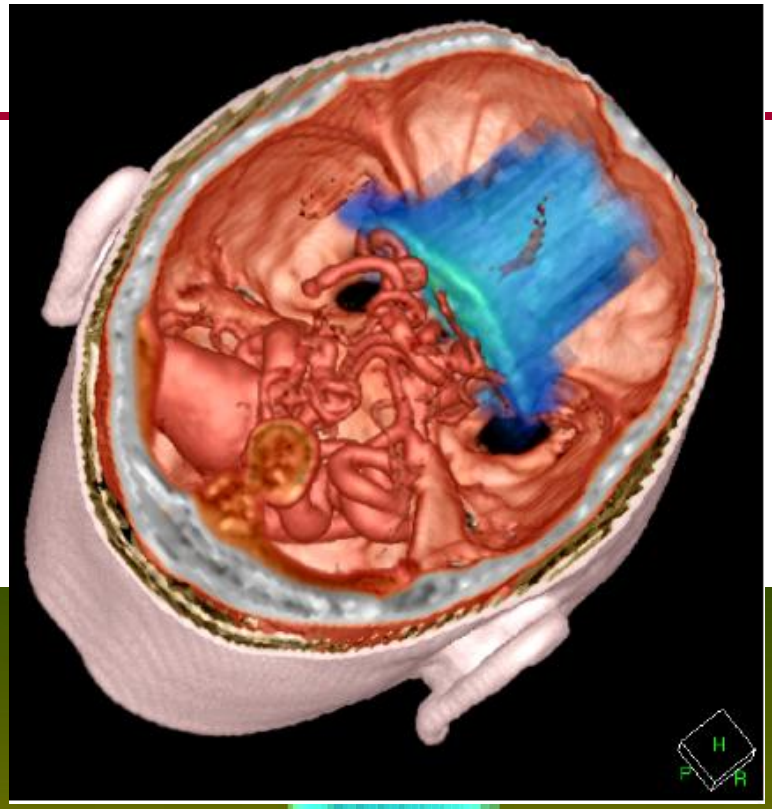
Committees

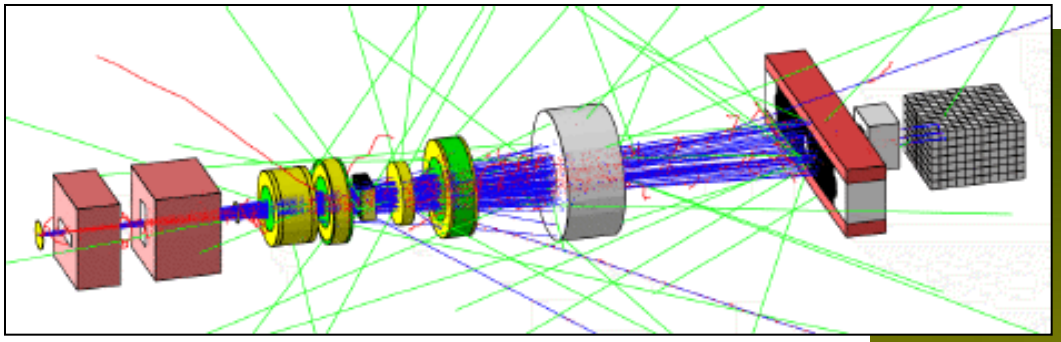
For questions, contact:

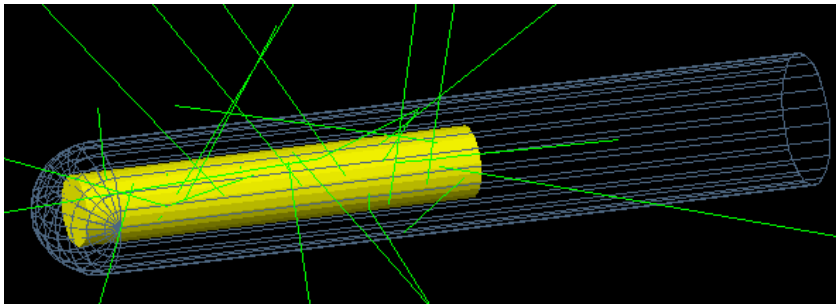
Local Organizing Committee
or
Makoto Asai
SLAC National Accelerator Laboratory
2575 Sand Hill Road, Menlo

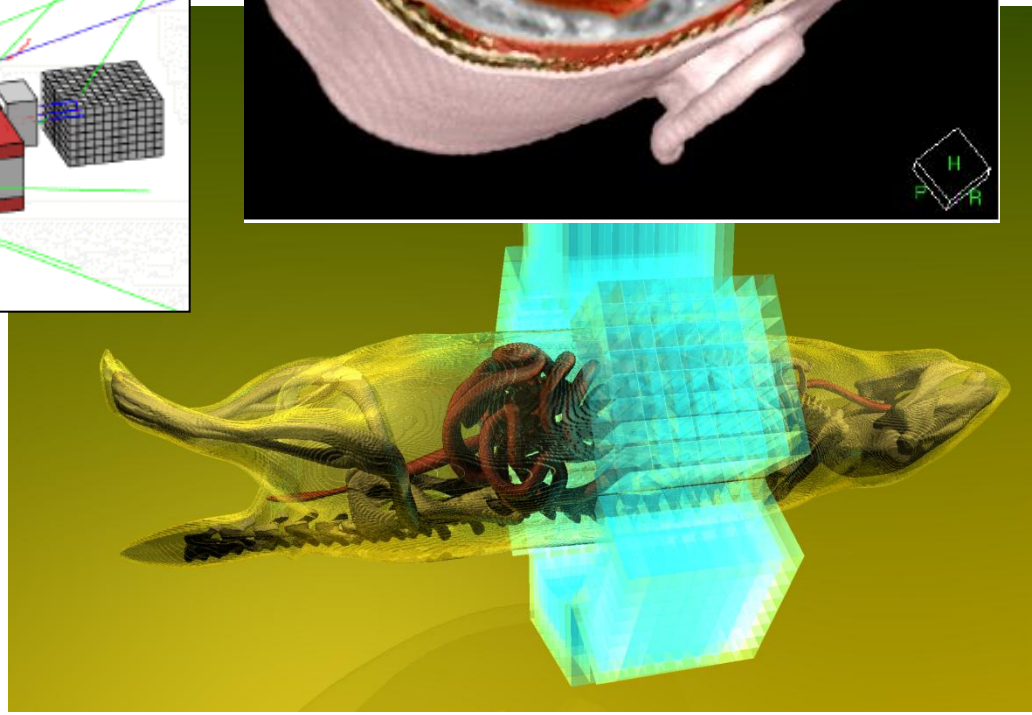
Geant4 @ Medical Science

- Four major use cases
  - Beam therapy
  - Brachytherapy
  - Imaging
  - Cell Irradiation study



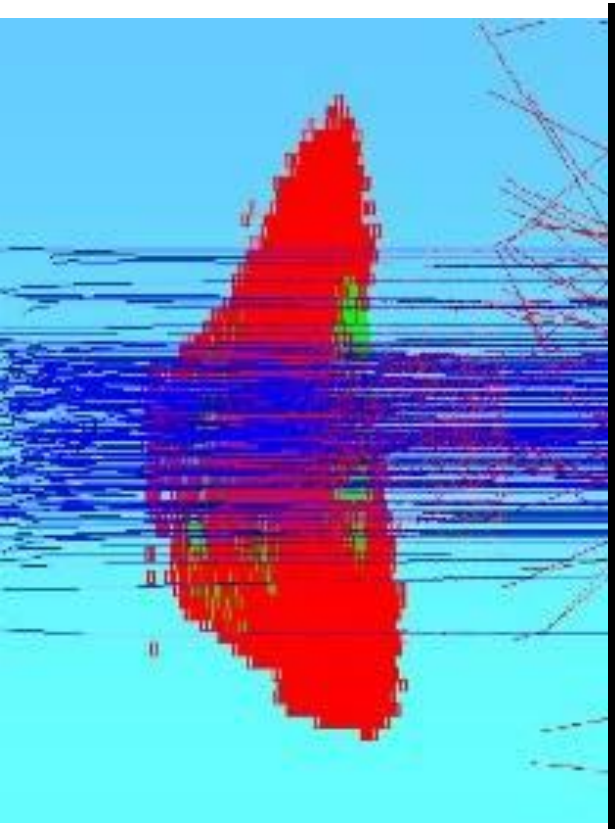


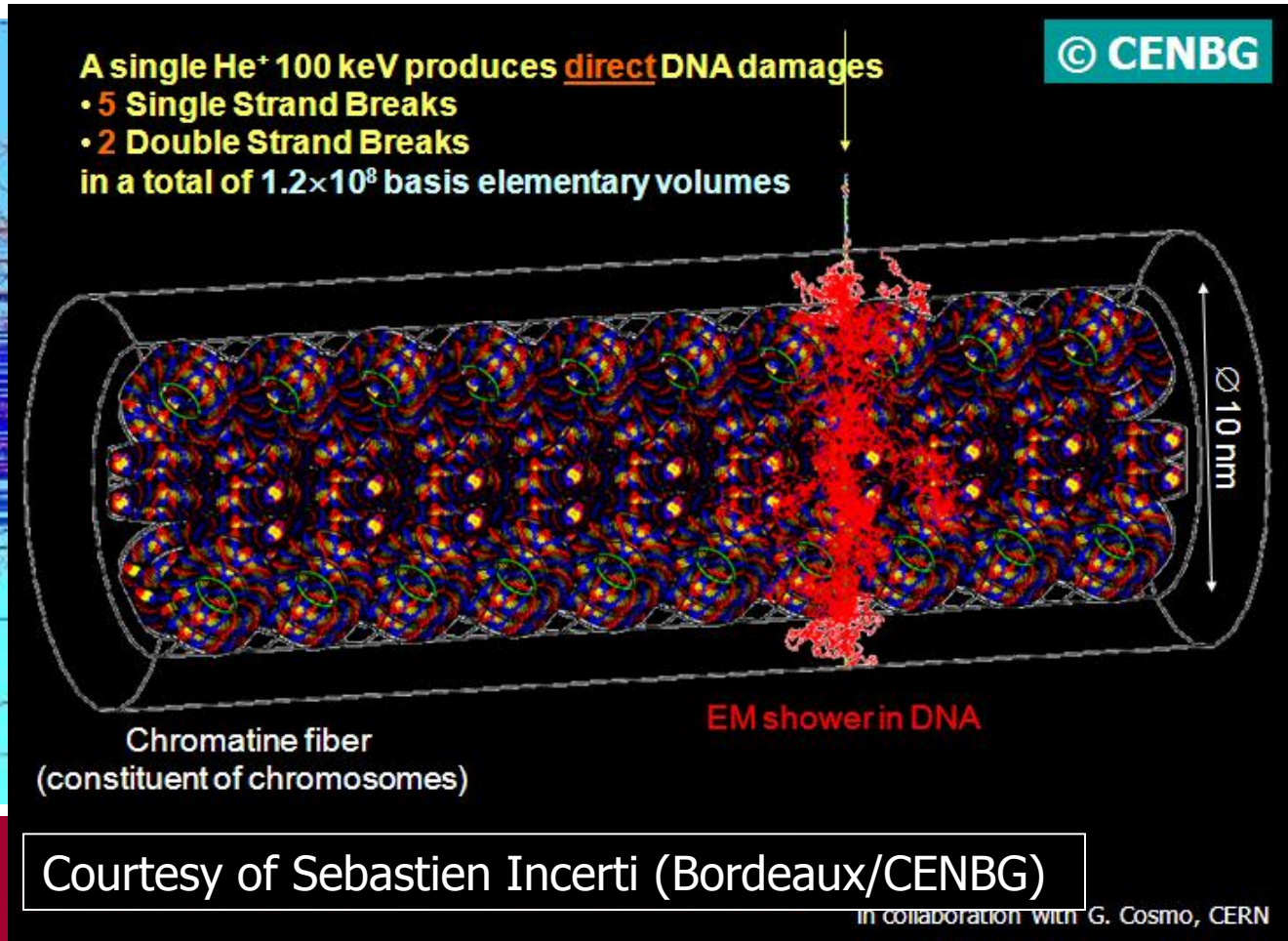




Single cell irradiation

- Example of single cell irradiation by 3 MeV alpha particles in a high-resolution cellular phantom
  - 4h or 24h incubated cell
  - 64 x 64 x 60 resolution
  - 0.36 x 0.36 x 0.16 μm^3 voxel size
- Full CENBG microbeam irradiation setup simulated





Courtesy of Sebastien Incerti (Bordeaux/CENBG)

In collaboration with G. Cosmo, CERN

http://geant4.slac.stanford.edu/g4namu/

G4NAMU

The Geant4 North American Medical User Organization

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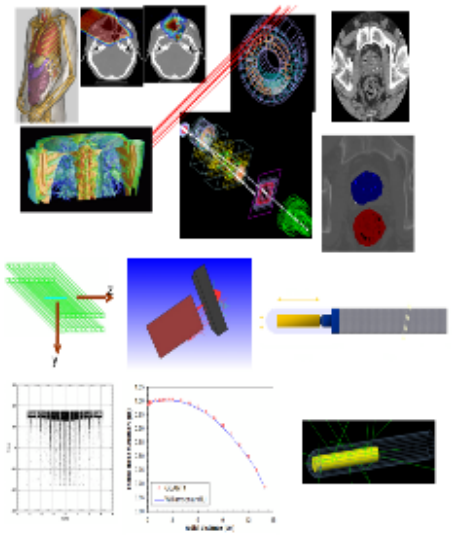


What ...

G4NAMU was launched in May of 2005 to provide a meeting place for the rapidly growing Geant4 medical user community of North America. The purpose of G4NAMU is to bring this community together to share issues and advice, to develop regional collaboration and to communicate as a group to the Geant4 developers.

Who ...

G4NAMU's current membership includes 131 members from 60 institutions throughout Canada and the United States.

While many G4NAMU resources are provided by the SLAC National Accelerator Laboratory's Geant4 team, G4NAMU is intended to be a consensus organization that evolves as needed by its members.

How ...

G4NAMU communicates through a mailing list, geant4-namu@slac.stanford.edu. The list is lightly moderated just to maintain focus and prevent spam.

- To join the list, send mail to perl@slac.stanford.edu
- Hints on using the mailing list

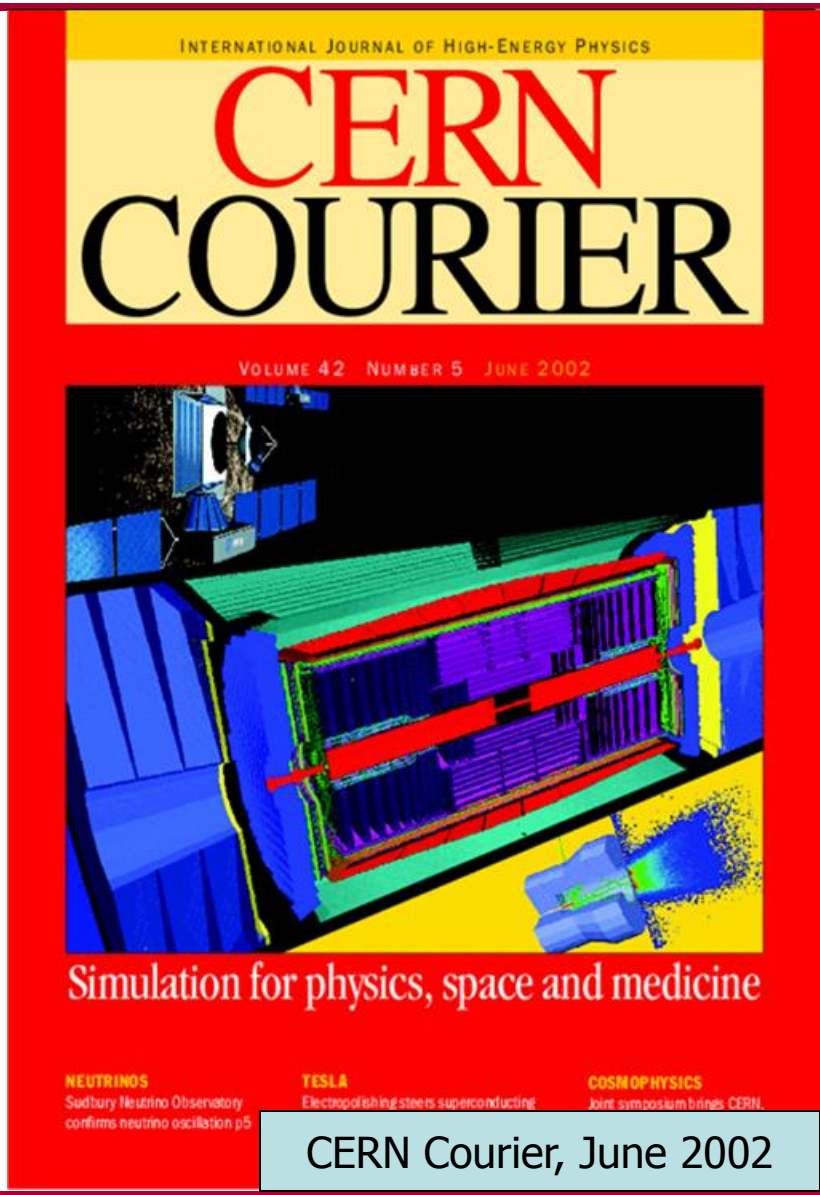
Latest News ...

G4NAMU at AAPM Philadelphia

- G4NAMU members attending the American Association of Physicists in Medicine 52th Annual Meeting in Philadelphia will meet on Sunday, July 18th from 6 - 7:30 PM.
- Location: Marriott Hotel (the AAPM Headquarters hotel across the street from the Conference Center) Room: Salon 1
- The meeting will be open to all, will provide an opportunity for those with posters and talks at this year's AAPM

Geant4 Spinoff

- Since the beginning of designing Geant4, a variety of requirements have also been taken into account from heavy ion physics, CP violation physics, cosmic-ray physics, astrophysics, space science and medical applications.
- Geant4 is a showcase example of technology transfer from High Energy Physics to other scientific fields such as space and medicine.
- The major developments and refinements of Geant4 are now driven by requirements from these application domains.
- In recent Geant4 tutorials, majorities of attendees are from space, medical, material and industrial application domains.



CERN Courier, June 2002

http://www.in-cites.com/hotpapers/2004/november04-eng.html

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"Super Hot" Papers in Science Published Since 2003

Engineering

(Sorted by citations. 3 of 128)

1 Citations: 133

Title: GEANT4-A SIMULATION TOOLKIT

Authors: AGOSTINELLI S; ALLISON J; AMAKO K; APOSTOLAKIS J; ARAUJO H; ARCE P; ASAI M; AXEN D; BANERJEE S; BARRAND G; BEHNER F; BELLAGAMBA L; BOUDREAU J; BROGLIA L; BRUNENGO A; BURKHARDT H; CHAUVIE S; CHUMA J; CHYTRACEK R; COOPERMAN G; COSMO G; DEGTYARENKO P; DELL'ACQUA A; DEPAOLA G; DIETRICH D; ENAMI R; FELICIELLO A; FERGUSON C; FESEFELDT H; FOLGER G; FOPPIANO F; FORTI A; GARELLI S; GIANI S; GIANNITRAPANI R; GIBIN D; CADENAS JJG; GONZALEZ I; ABRIL GG; GREENIAUS G; GREINER W; GRICHINE V; GROSSHEIM A; GUATELLI S; GUMPLINGER P; HAMATSU R; HASHIMOTO K; HASUI H; HEIKKINEN A; HOWARD A; IVANCHENKO V; JOHNSON A; JONES FW; KALLENBACH J; KANAYA N; KAWABATA M; KAWABATA Y; KAWAGUTI M; KELNER S; KENT P; KIMURA A; KODAMA T; KOKOULIN R; KOSSOV M; KURASHIGE H; LAMANNA E; LAMPEN T; LARA V; LEFEBURE V; LEI F; LIENDL M; LOCKMAN W; LONGO F; MAGNI S; MAIRE M; MEDERNACH E; MINAMIMOTO K; DE FREITAS PM; MORITA Y; MURAKAMI K; NAGAMATU M; NARTALLO R; NIEMINEN P; NISHIMURA T; OHTSUBO K; OKAMURA M; O'NEALE S; OOHATA Y; PAECH K; PERL J; PFEIFFER A; PIA MG; RANJARD F; RYBIN A; SADILOV S; DI SALVO E; SANTIN G; SASAKI T; SAVVAS N; SAWADA Y; SCHERER S; SEIL S; SIROTENKO V; SMITH D; STARKOV N; STOECKER H; SULKIMO J; TAKAHATA M; TANAKA S; TCHERNIAEV E; TEHRANI ES; TROPEANO M; TRUSCOTT P; UNO H; URBAN L; URBAN P; VERDERI M; WALKDEN A; WANDER W; WEBER H; WELLISCH JP;

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1703 Documents that cite:

Agostinelli S., Allison J., Amako K., Apostolakis J., Araujo H., Arce P., Asai M., (...), Savvas N.

GEANT4 - A simulation toolkit

(2003) *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 506 (3), pp. 250-303.

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Source Title	Author Name	Year	Document Type	Subject Area
Nuclear Instruments and Methods in Physics Research Section A Accelerators Spectrometers Detectors and Associated Equipment (232)	Stugu, B. (156)	2009 (227)	Article (1,173)	Physics and Astronomy (1,193)
IEEE Nuclear Science Symposium Conference Record (190)	Ofte, I. (156)	2008 (374)	Conference Paper (505)	Engineering (465)
Physical Review D Particles Fields Gravitation and Cosmology (143)	Karyotakis, Y. (156)	2007 (389)	Review (23)	Medicine (171)
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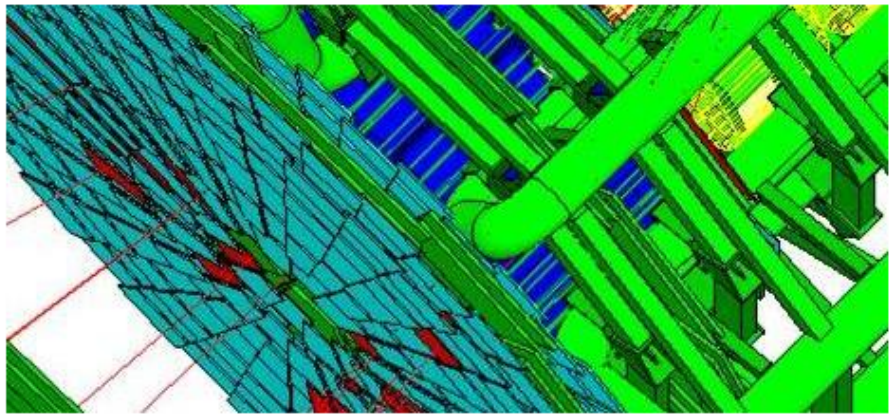

Geant4 at SLAC

Geant4 is a toolkit for the simulation of particles passing through and interacting with matter. Its areas of application include high energy, nuclear and accelerator physics, as well as studies in medical and space science. Geant4 is developed and maintained by the international Geant4 Collaboration. Members of the SLAC Geant4 team have been actively participating in the Geant4 collaboration since its beginning, and currently take leading roles in several key areas of the collaboration. SLAC Geant4 members made significant contributions in simulation development for the BaBar experiment at SLAC, which pioneered the use of Geant4 in the simulation of high energy physics experiments. The SLAC Geant4 Team supports the use of Geant4 for on-site users including ATLAS, BaBar, Cryogenic Dark Matter Search (CDMS), Enriched Xenon Observatory (EXO), Fermi Gamma-ray Space Telescope, and International Linear Collider. The team also supports general Geant4 users of all application domains in North America and beyond.

News

- *Apr. 21, 2010* - Patch-01 for Geant4 9.3 is released.
- *Mar. 11, 2010* - CLHEP 2.0.4.6 is released.
- *Feb. 19, 2010* - Patch-03 for Geant4 9.2 is released. Please note that this patch is NOT required if you have already installed Geant4 version 9.3.
- *Feb. 02, 2010* - Step by Step Installation Guide is updated for Geant4 v9.3.
- *Dec. 18, 2009* - Geant4 version 9.3 is released.

Events

- *Jun. 14-18, 2010* - Geant4 tutorial @ Puebla, Mexico
- *Jul. 18, 2010* - G4NAMU annual meeting
- *Aug. 18-20, 2010* - 7th Geant4 Space Users Workshop
- *Oct. 17-20, 2010* - Monte Carlo 2010.

Visitors

Ecole Geant4 2007 at Paris

Geant4 PARIS, 2007

Geant4 Tutorial @ Paris 2007

at the Ministry of Research in Paris on June 4-8, 2007

You are here : Home > Geant4 Tutorial @ Paris

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- Registration
- Participants (104)
- Program
- 2006 Geant4 Tutorials
- Administration

Versions : PDF (135 ko), JPEG (354 ko).

The tutorial will cover high energy/nuclear physics, space science, accelerator beam lines and medical applications amongst others.

June, 4-8 2007, Ministry of Research, Paris.

Registration closed.
The maximum number of participants is reached.

Sponsors

DSM direction sciences de la matière

DSV directions sciences du vivant

Geant4 tutorial course at Puebla, Mexico

Geant4 @ SLAC

English Español

As the HEP, Astroparticle and Medical Physics Mexican community shows an increasing interest on simulation processes, one of the most used tools is the Geant4 program. The FCFM-BUAP group, want to invite to all the interested to the:

Tutorial Course of Geant4 at Puebla

This is a five day hands-on tutorial course based on **Geant4**. Lectures cover all aspects of Geant4 from basic installation through advanced topics and will be interspersed with examples that build a progressively more complex application extensible to real use.

The course should be of interest both to complete novices and to those who already have some basic familiarity with Geant4. Participants are expected to have a reasonable knowledge of C++.

Agenda

The Course consists in morning and afternoon sessions, from 14th to 18th June at the FCFM-BUAP campus. The tutorial starts at 10:00 on Monday, 14th June and adjourns at 12:30 on Friday, 18th June.

http://www.jlab.org/~gueye/Geant4/2009/

IRIS-Geant4 Tutorial Series

2009 Geant4 Tutorial - Dakar, Senegal
November 14-18, 2009

The Geant4 simulation toolkit allows simulating the interaction of particles passing through matter. Originally developed for high energy physics, the toolkit has now found applications in areas such as space science, material science, and medical physics, to name a few. Geant4 has an extremely high coding flexibility and encompasses a series of physical models to describe all electromagnetic and hadronic interactions from a few eV to the TeV regime. It also supersedes most of its competitors in the market as being a freely available open source tool that provides powerful geometries handling and visualization tools. The tutorial in Dakar, Senegal, will not only consist of the first ever to be housed on the African continent, but will also be the first of a series aimed at developing a local expertise to launch new research areas in the field of Monte Carlo simulations for African scientists using the Geant4 toolkit. The primary targets of this tutorial are faculty, junior and senior researchers from African universities and research centers that are novice or expert in the use of the Geant4 toolkit. The course will provide basic and semi-advanced knowledge on the use of the toolkit and some of its applications (nuclear and particle physics, accelerator physics, biomedical physics, and grid). The tutorial is limited to a maximum of 30 participants.

Participants are expected to install the latest version of Geant4 (9.2.p02) prior to attending the tutorial. Information on how to install this toolkit on various platforms can be found here.

Organizing Committee

O. Ka (Université Cheikh Anta Diop, Senegal)
P. Guèye (Hampton University, USA)
N. A. Boye-Faye (Université Cheikh Anta Diop, Senegal)
M. Mansour Faye (Université Cheikh Anta Diop, Senegal)
C. Thiandoume (Université Cheikh Anta Diop, Senegal)
F. K. Guèye (Université Cheikh Anta DIop, Senegal)
M. Diagne (Aristide LeDantec Hospital, Senegal)

International Organizing Committee

P. Guèye (Hampton University, USA)
O. Ka (Université Cheikh Anta Diop, Senegal)
M. Asai (Stanford Linear Accelerator Center, USA)
D. Wright (Stanford Linear Accelerator Center, USA)
J. Perl (Stanford Linear Accelerator Center, USA)
V. Breton (Laboratoire de Physique Corpusculaire de Clermont-Ferrand, France)
S. Incerti (Centre d'Etudes Nucléaire de Bordeaux Gradignan, France)

Sponsors

Ministère de la Recherche Scientifique au Sénégal (Senegal Government)
Faculté des Sciences et Techniques, Université Cheikh Anta Diop (UCAD)
Jefferson Lab (JLab)
National Society of Black Physicists (NSBP)
National Society of Hispanic Physicists (NSHP)
Centre National de la Recherche Scientifique (CNRS)
Institut de Physique Nucléaire et de Physique des Particules (IN2P3)

Geant4 Tutorial Course at Dakar

- Four full-day tutorial course Saturday through Tuesday.

Saturday (11/14/09)

09:00 - 09:15 Opening (O.
09:15 - 10:00 Kernel I (M.
- General introduction
- Global structure of Gear
- Run, event, track, step, t
- User classes
10:00 - 10:30 Basics of Us
- G4UIterminal class
- Syntax of UI command
- Introduction to Visualiz
- Quick Looks at Seven V
- Basic Visualization Con
10:30 - 11:00 Break
11:00 - 12:30 Hands-on I (
- Execute a few novice ex
-- Linux Mac Windows
- Troubleshooting: Install
12:30 - 14:00 Lunch Brea
14:00 - 14:20 Material Def
- Defining Materials
- NIST Material database
14:20 - 15:30 Geometry I (
- Introduction
- G4VUserDetectorConst
- Solid
- Logical volume
- Placement volume
15:30 - 16:00 Break
16:00 - 17:30 Hands-on II
- Material and geometry i
- Visualization of geomet

Sunday (11/15/09)

09:00 - 09:30 Primary Part
- G4VUserPrimaryGenera
- G4ParticleGun
- General particle source
09:30 - 09:50 Visualizatio
- Additional Visualizatio
09:50 - 10:30 Physics I (D.
- Introduction
- G4VUserPhysicsList cla
- Modular physics list
- Packaged physics lists
- Production thresholds
10:30 - 11:00 Break
11:00 - 12:30 Hands-on III
- Shoot primaries
- Minimal (EM) physics l
- Visualization of trajecto
12:30 - 14:00 Lunch Brea
14:00 - 14:30 Physics II (D
- Overview
- Processes
- Decay
14:30 - 15:30 EM Physics
- EM standard overview
- Low-E EM overview
15:30 - 16:00 Break
16:00 - 16:30 Scoring I (M
- Introduction to sensitivi
- Basic scoring command
16:30 - 17:30 Hands-on IV
- Scoring commands

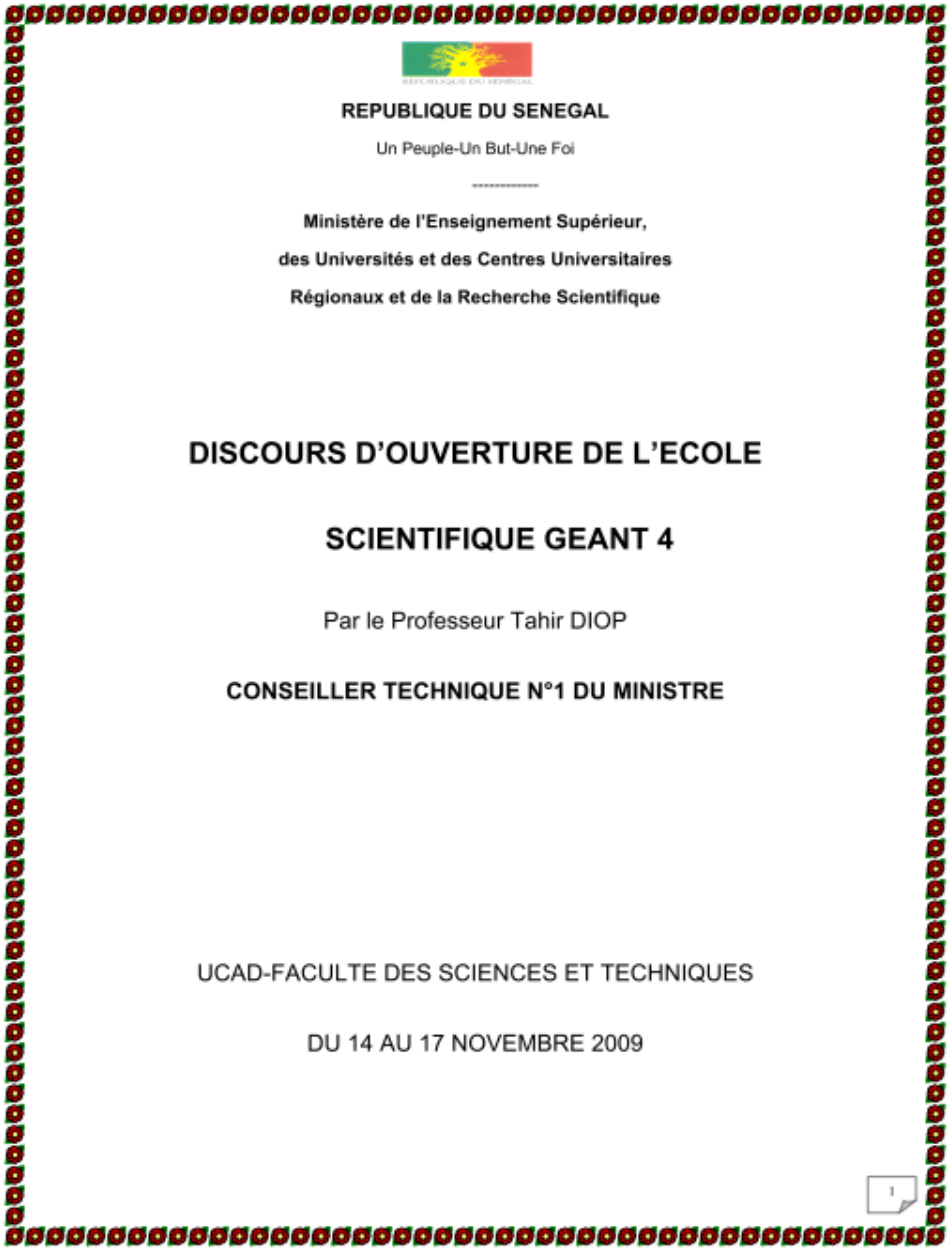
Monday (11/16/09)

09:00 - 09:30 Geant4 applic
09:30 - 10:00 User Docume
- Installation Guide
- Application developers m
- Novice examples in Gear
- LXR source code browse
- HyperNews
10:00 - 10:30 Hadronic Phy
- Overview
- Elastic process
- Precompound/de-exitatio
- Cascade models
- Parameterized models
10:30 - 11:00 Break
11:00 - 11:30 Geant4 applic
11:30 - 12:00 Hadronic Phy
- Neutron physics
- Ion physics
- Radioactive decay
12:00 - 12:30 Geometry II (
- Parametrized volume
- Replicated volume
- Divided volume
12:30 - 14:00 Lunch Break
14:00 - 14:30 Kernel II (M.
- User limits
- User information classes
14:30 - 15:00 Hadronic Phy
- String models
- CHIPS / electro-nuclear r

Tuesday (11/17/09)

09:00 - 09:30 Geant4 application: nuclear/accelerator physics (P. G
09:30 - 10:00 User Interface (M.Asai)
- Interactive mode / batch mode
- Define user commands
10:00 - 10:30 Physics III (D.Wright)
- Cuts per region
- Optical
10:30 - 11:00 Break
11:00 - 11:30 Grid application (L.Maigne)
11:30 - 12:30 Hands-on VI (L.Maigne, P. Guèye)
- Grid application
12:30 - 14:00 Lunch break
14:00 - 14:30 Geometry III (M.Asai)
- Nested parametrization
- Geometry checking tools
- Magnetic field
14:30 - 15:00 User Documents and Examples II (D.Wright)
- Toolkit developers manual
- Physics reference manual
- Extended and advanced examples in Geant4 distribution
15:00 - 15:30 How to Upgrade Your Geant4 Release (J.Perl)
- About the new Geant4 release, 9.3
- Major versus minor releases
- What to look for in the release notes
- How to upgrade
15:30 - 16:00 Break
16:00 - 16:45 Q/A and discussion
16:45 - 17:00 Closing (O.Ka)

Opening speech by Ministry of Higher Education



REPUBLIQUE DU SENEGAL

Un Peuple-Un But-Une Foi

Ministère de l'Enseignement Supérieur,

des Universités et des Centres Universitaires

Régionaux et de la Recherche Scientifique

DISCOURS D'OUVERTURE DE L'ECOLE

SCIENTIFIQUE GEANT 4

Par le Professeur Tahir DIOP

CONSEILLER TECHNIQUE N°1 DU MINISTRE

UCAD-FACULTE DES SCIENCES ET TECHNIQUES

DU 14 AU 17 NOVEMBRE 2009

Opening spee

REPUE

Un

Ministère de

des Université

Régionaux et

DISCOURS D'O

SCIEN

Par le P

CONSEILLER TE

UCAD-FACULTE DI

DU 14 AU

Notre volonté d'accompagner ces efforts des organisateurs ainsi que de leurs partenaires américains et français s'est traduit par une importante subvention pour la tenue de cette Ecole.

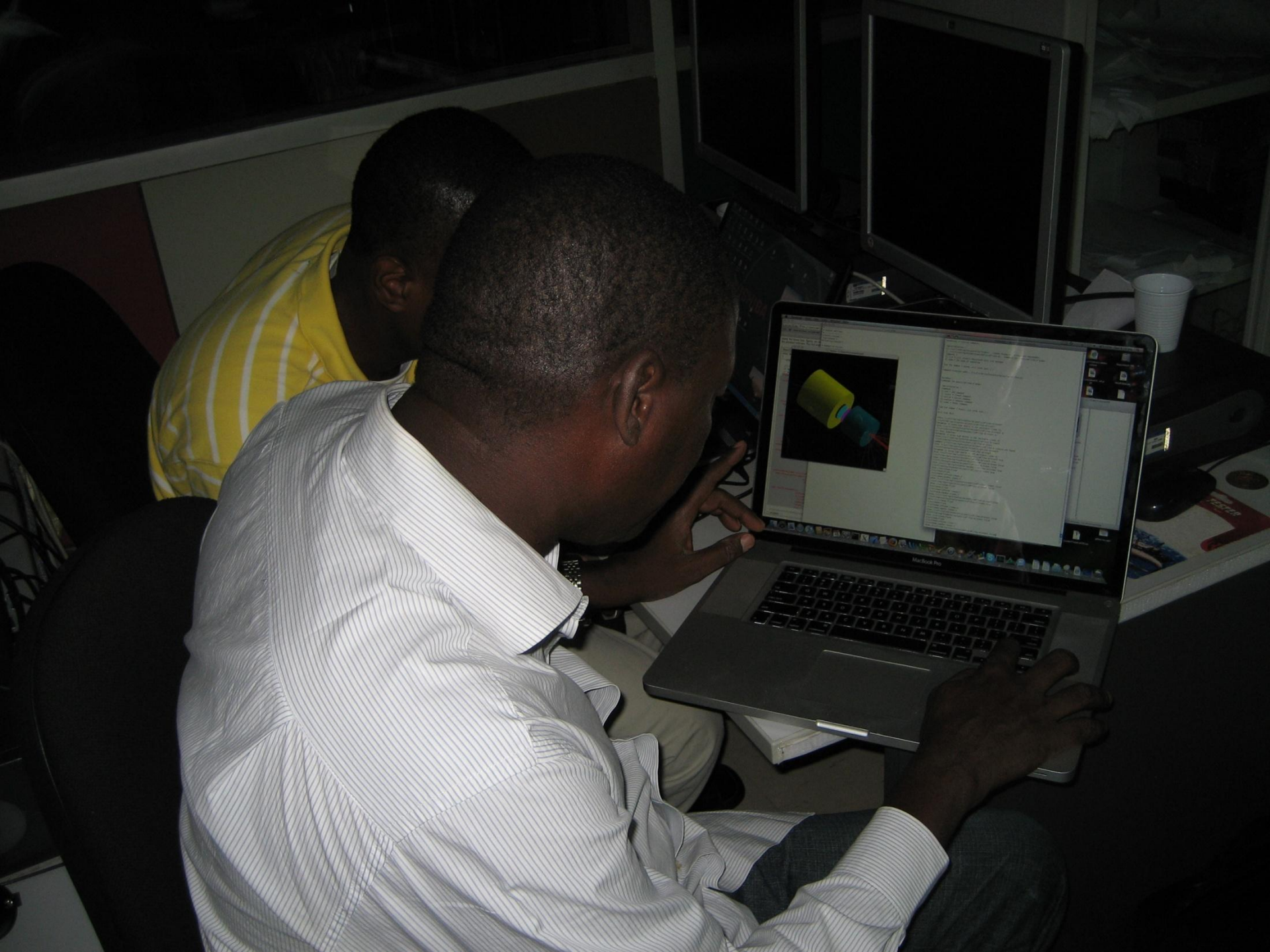
Nous tâcherons de continuer ce soutien pour les futures éditions de l'Ecole, dans la mesure des possibilités et priorités de l'heure de notre département.

Nous apprécions aussi à sa juste valeur l'engagement des chercheurs du SLAC National Accelerator Laboratory en Californie, qui sont venus aider au démarrage de cette formation, en apportant leur expertise dans GEANT4 qui est reconnue à l'échelle mondiale. Leur dévouement à disséminer la connaissance, sans autre contrepartie que la satisfaction du partager, est bien dans l'esprit de la science, domaine par excellence de la générosité.

Nous sommes donc particulièrement satisfaits d'avoir aujourd'hui l'occasion de déclarer ouverte la première Ecole sur GEANT4 en Afrique, en souhaitant que la périodicité voulue par les organisateurs puisse se réaliser.

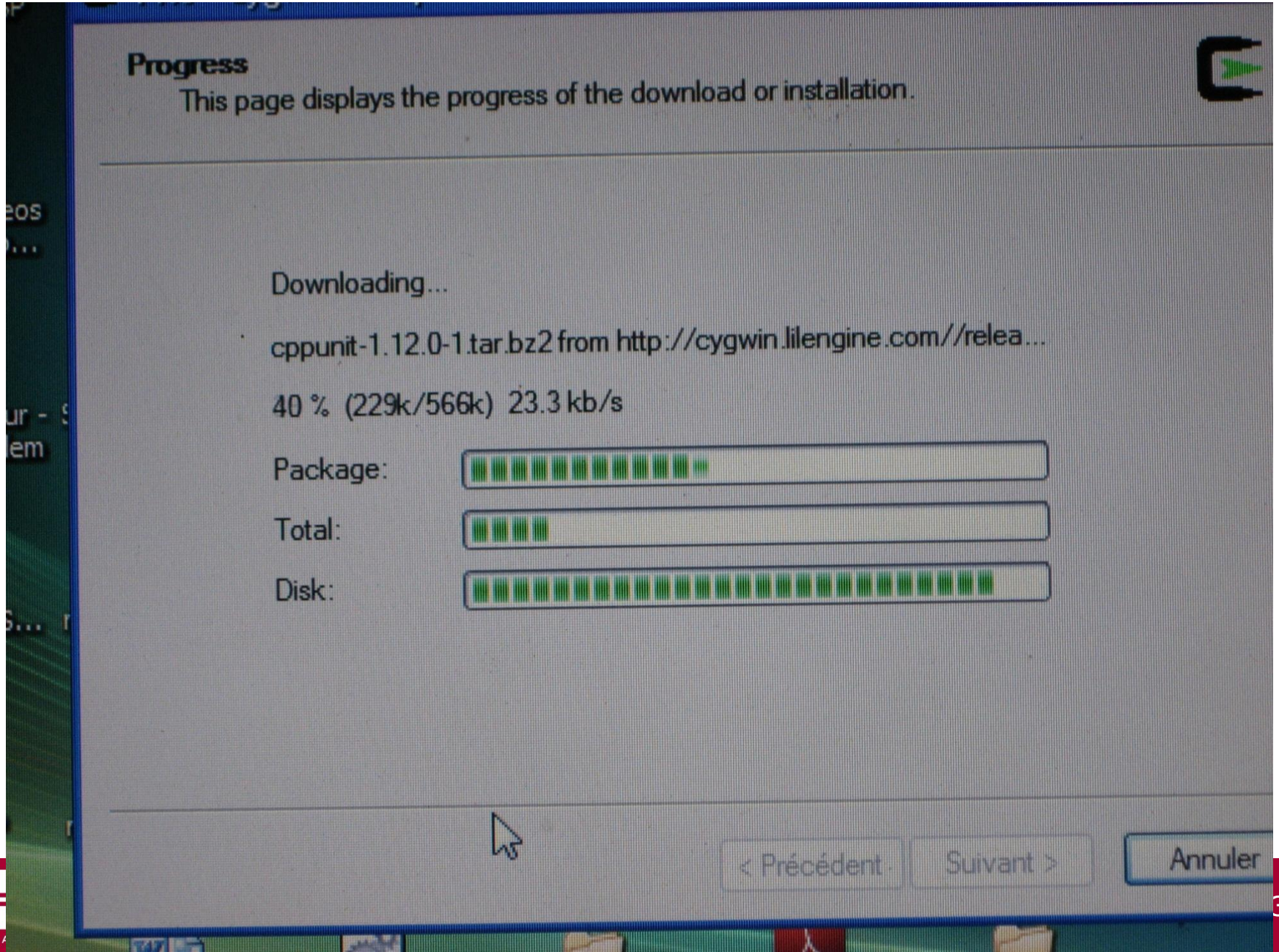
Geant4 Tutorial Course at Dakar

- Held at Centre de Calcul Informatique of Université Cheikh Anta Diop, Dakar
- 25 participants, mostly material scientists, some medical physicists.

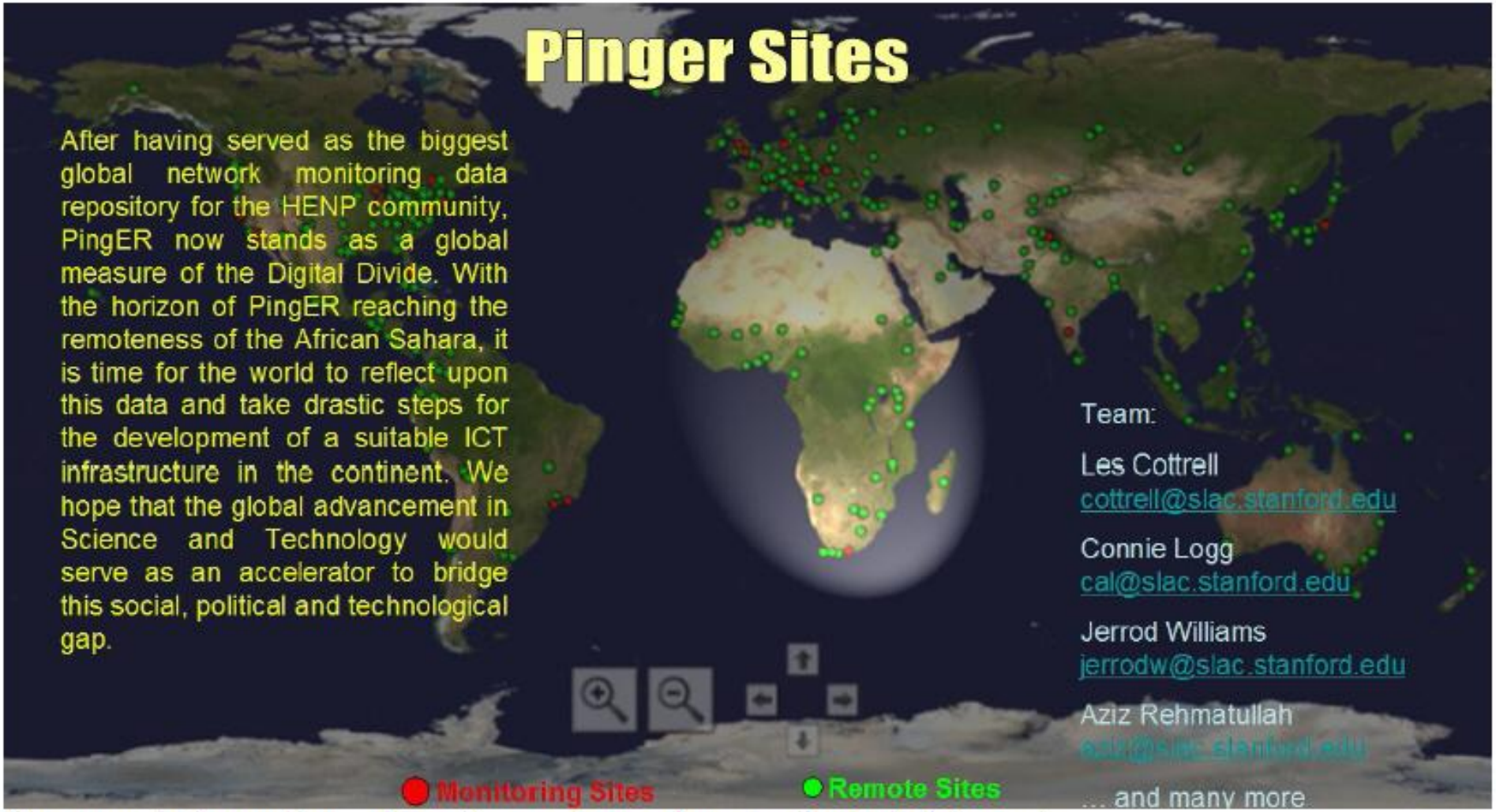


Fedora

Network speed was really an issue.



UCAD joined to PingER



For more information: http://www-iepm.slac.stanford.edu/pinger/

Outcomes and perspectives

- We are pleased to report that three outcome projects are steadily progressing.
  - Medical physics: Geant4-based dosimetry studies and Treatment Planning System (TPS) for the Dakar Cancer Institute. The intent is to use Geant4 as a TPS for Senegal so as to avoid issues with commercial products. Anticipated first scientific outcome in the Fall 2010.
  - DNA physics tracking process. This is an extension of the Geant4-DNA project that will couple Geant4 with ultrafast laser Particle-In-Cell simulations. Expected outcome in Spring 2011. PIXE studies will follow.
  - High energy physics: quasi elastic diffusion - elastic diffusion. This will be carried out by a student who attended the tutorial and will do her PhD at JLab. Geant4 will be used for acceptance of the detectors. Anticipated first scientific outcome in Spring 2011.
- Discussions with Secretary of Scientific Research to implement an educational component where Geant4 will play a major role:
  - training center for medical physics (AAPM-, IOMP-supported; discussions with NIH centers)
- Regular Geant4 tutorials for wider west-African audience is foreseen.