

Introduction to Parallel Sessions

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4th October 2010, G4 Collaboration WS, ESTEC

Overview

| | Monday | Tuesday | Wednesday | Thursday | Friday | | | | |
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| 8-9 | Registration | | | | | | | | |
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| 17-18 | | | | | | | | | |
| 18-19 | Reception | | Banquet | | | | | | |

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- ▶ EM physics
 - ▶ Parallel 1-A : New EM models and interfaces (Andreas Schälicke)
 - ▶ Parallel 2-A : New EM validation results (Sebastien Incerti)
- ▶ Visualization & UI (Joseph Perl)
 - ▶ Parallel 1-B : Discuss Recent Changes in Vis
 - ▶ Parallel 4-B : Qt at other Vis work remaining for December release
- ▶ Technical issues
 - ▶ Parallel 2-B : Migration to svn and to cmake (Gunter Folger)
 - ▶ Parallel 3-B : Technical aspects of multi-threading approach (John A)
 - ▶ Parallel 4-A : Review of existing biasing options (Marc Verderi)
 - ▶ Parallel 5-B : Performance improvements (Daniel Elvira)
- ▶ Hadronic physics (Dennis Wright)
 - ▶ Parallel 3-A : Cross section re-design (Vladimir Uzhinskiy)
 - ▶ Parallel 5-A : Validation suite (Julia Yarba)
 - ▶ Parallel 6-A : Transition region/shower shape (Andrea Dotti)
 - ▶ Parallel 7-A : New models and requirements (Tatsumi Koi)
- ▶ Geometry (Gabriele Cosmo / Makoto Asai)
 - ▶ Parallel 6-B : Development planning and review of open issues (1)
 - ▶ Parallel 7-B : Development planning and review of open issues (2)

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EM physics

Parallel 1-A, Monday, 16:20-18:00, *New EM models and interfaces*

- ▶ Validation of **scattering models** at high energies (Orjan Dale)
- ▶ Simulation of **Energy Deposition** in Gases (Mary Tsagri)
- ▶ **Fluctuation model** upgrade (Laszlo Urban)
- ▶ Attempt to lower the **delta rays** production (Jean Sauvestre)
- ▶ Problems and requirements of **space users** (Giovanni Santin)
- ▶ **Discussion**

Parallel 2-A Tuesday, 14:10-15:50, *New EM validation results*

- ▶ Validation of electron, proton and alpha **ranges** (Christina Z)
- ▶ Validations of the standard EM physics for **Radiotherapy** (Lydia M)
- ▶ **Multiple scattering** model at **low energy** in water (Yann Perrot)
- ▶ Electron Energy **Backscatter** (Anton Lechner)
- ▶ **Fano cavity** results (Michel Maire)
- ▶ **Discussion**

EM physics

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Visualization

Parallel 1-B, Monday, 16:20-18:00: Visualization Recent work and Plans

This session should be of **interest to the entire collaboration**.

- ▶ **Qt**: Current status, remaining work to move from Beta to Full Release (Laurent Garnier)
- ▶ **gMocren** and other new Volume Visualization Developments (Joseph Perl)
- ▶ How and why we **updated** the Vis usage in **almost all of the Examples** (John Allison)
- ▶ And then Open **Discussion** on ongoing Vis priorities

Parallel 4-B Wednesday, 14:10-15:50: Visualization Work Session

A **Work Session** of interest to members of the Vis Working Group only.

- ▶ focus on remaining issues for release 9.4 (particular attention to Qt)

Visualization

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Technical issues (Gunter Folger / John Apostolakis)

Parallel 2-B Tuesday, 14:10-15:50: Migration to svn and to cmake
Software infrastructure & tools are changing

- ▶ **cmake** agreed to replace **make/configure**
 - ▶ Beta in cvs as of ref-08
- ▶ **svn** being proposed to **replace cvs**

Discussion: Technical details of migrations

All developers will profit from these new tools

You are invited to join this session to **learn and give early feedback**

Parallel 3-B Tuesday, 16:20-18:00: Technical aspects of proposed multi-threading approach

- ▶ **Working session**
- ▶ Discussion of technical details

Technical issues (Marc Verderi)

Parallel 4-A Wednesday 14:10-15:50: Review of existing biasing options

Review of existing biasing options:

- ▶ Introduction (Laurent D./Marc V.)
- ▶ Review of existing options in other packages (John Ap.)
- ▶ Biasing options in the **hadronics** (Dennis W.)
- ▶ ReverseMC (Laurent D.)
- ▶ Biasing options in **gps** (Fan Lei)
- ▶ **Geometry** biasing , Weight Window Alexander H.
- ▶ Scoring and Biasing, Wrapper process (Makoto)

Open **discussion**

- ▶ Possible Improvements/Generalizations
- ▶ **Documentation** & Examples
- ▶ Completion of existing features
- ▶ Collection wishes

Technical issues (Daniel Elvira)

Parallel 5-B Wednesday 16:20-18:00: Performance improvements (Daniel Elvira)

Focus: on progress toward **automated tools** (based on different profilers) to test a set of applications frequently for performance opportunities to optimize code and problems to fix.

- ▶ Introduction
- ▶ The **FAST profiler** and its application to G4
- ▶ **Perfmon** use on simple G4 applications
- ▶ The **PTU (intel) profiler** and G4
- ▶ **Discussion** on strategy/plan for 2011

Technical issues

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Hadronic physics 1/2 (Vladimir Uzhinskiy/Julia Yarba)

Parallel 3-A Tuesday 16:20-18:00: Cross section re-design

- ▶ Current Status of Hadron-hadron Cross Section **Theory**
- ▶ Hadron-Nucleus and Nucleus-Nucleus Cross Sections
- ▶ Technical Details of **Implementation** and **Unification** of Geant4 Hadronic Cross Sections

Parallel 5-A Wednesday 16:20-18:00: Validation suite

- ▶ Status report of all areas of **hadronic validation** (Dennis Wright)
- ▶ Latest validation results in the **intermediate energy** range (Sunanda Banerjee)
- ▶ **Discussion** on HAD Validation
- ▶ Status report on **The Validation Framework** (Julia Yarba)
- ▶ Overview of the **EM Validation** (Andreas Schälicke)
- ▶ **Joint discussion** with the EM group on Validation Framework

Hadronic physics 3 (Andrea Dotti)

Parallel 6-A Thursday 14:10-15:50: Transition region/shower shape

Transition Region

- ▶ **Transition Region:** Recent Results and Progress
Where are we now? What can we do at model level to solve this issue?
- ▶ Extending FTF to Lower Energies (Vladimir Uzhinskiy)
- ▶ Extending Bertini to Higher Energies (Michael Kelsey)

Shower Shapes

- ▶ **Shower Moments:** A Compact Representation of Shower Shapes
What can we do to improve them? How do we measure them?
- ▶ Selected Results from LHC and CALICE Calorimeters on Shower Shapes
- ▶ **Discussion:** Validating a Transition Region and Model Aspects Affecting Shower Shapes

Hadronic physics 4 (Tatsumi Koi)

Parallel 7-A Thursday 16:20-18:00: Model Extensions and Consolidations

- ▶ The SAID Database, Cross Sections and Geant4 Models (Frederick Jones)
- ▶ Future Development of INCL/ABLA (Pekka Kaitaniemi)
- ▶ Low Energy Neutron Development (Tatsumi Koi)
- ▶ Discussion: Medium Term Model Development
- ▶ Discussion: Hadronic Physics Not Covered by Current Models
- ▶ Review & Discussion: Integration of Precompound/De-excitation

Hadronic physics

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Geometry

Parallel 6-B Thursday 14:10-15:50: Development planning and review of open issues (1)

- ▶ A Geant4 **Magnetic Field** Manager (Laurent Desorgher)
- ▶ **Cylindrical** parameterisation for **regular navigation** (Pedro Arce)
- ▶ A **new shape**: G4TorusStack (Peter Gumplinger)
- ▶ **Discussion**

Parallel 7-B Thursday 16:20-18:00: Development planning and review of open issues (2)

Working session, with focus on

- ▶ parallel world navigation
- ▶ examples and documentation

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