Geant4 Beginners Course @ CERN

Report of Contributions

Contribution ID: **1** Type: **not specified**

Introduction

Tuesday, 22 January 2019 09:00 (1h 30m)

- General introduction to the course
- Basics of particle transport Monte Carlo
- Global structure of Geant4
- Run,event, track, step, trajectory, etc.
- User classes

Presenter: APOSTOLAKIS, John (CERN)

Contribution ID: **2** Type: **not specified**

User Documents and Examples

Tuesday, 22 January 2019 10:45 (40 minutes)

- Installation Guide
- Application & Toolkit developers manuals
- Physics reference manual
- Basic examples in Geant4 distribution
- Extended and advanced examples in Geant4 distribution
- GitHub, LXR source code browser
- Reporting problems/requirements, HyperNews

Presenter: FOLGER, Gunter (CERN)

Contribution ID: **3** Type: **not specified**

User Interface - I

Tuesday, 22 January 2019 11:25 (20 minutes)

- Syntax of UI command
- Interactive mode / batch mode
- G4UIExecutive class

Presenter: NOVAK, Mihaly (CERN)

Contribution ID: **4** Type: **not specified**

Visualization - I

Tuesday, 22 January 2019 11:45 (20 minutes)

- Introduction to Visualization
- Quick Looks at Visualization Drivers
- Basic Visualization Commands

Presenter: NOVAK, Mihaly (CERN)

Contribution ID: **5** Type: **not specified**

User Actions, Hits and Digits

Tuesday, 22 January 2019 12:25 (20 minutes)

- Mandatory user actions
- Optional user actions
- Sensitive detectors
- Hit/digits collections

Presenter: POKORSKI, Witold (CERN)

Contribution ID: **6** Type: **not specified**

Scoring - I

Tuesday, 22 January 2019 12:05 (20 minutes)

- Sensitive detectors & Hits
- Basic scoring commands

Presenter: APOSTOLAKIS, John (CERN)

Contribution ID: **7** Type: **not specified**

Multithreading - I

Tuesday, 22 January 2019 14:00 (20 minutes)

- Introduction to multithreading
- UI commands for multithreading

Presenter: APOSTOLAKIS, John (CERN)

Contribution ID: **8** Type: **not specified**

Hands-on - I

Tuesday, 22 January 2019 14:20 (30 minutes)

- Guide to Geant4 installation
- Execute a few basic examples

Presenters: APOSTOLAKIS, John (CERN); POKORSKI, Witold (CERN)

Contribution ID: **9** Type: **not specified**

Material Definition

Tuesday, 22 January 2019 14:50 (30 minutes)

- Defining Materials
- NIST Material database

Presenter: NOVAK, Mihaly (CERN)

Contribution ID: **10** Type: **not specified**

Geometry - I

Tuesday, 22 January 2019 15:35 (1h 30m)

- G4VUserDetectorConstruction class
- Geometrical shapes: solids
- Logical & Physical volumes
- Placements, Parametrised, Replicated volumes, basics
- Geometry checking tools
- GDML interface
- Magnetic field, basics

Presenter: COSMO, Gabriele (CERN)

Contribution ID: **11** Type: **not specified**

Hands-on II

Tuesday, 22 January 2019 17:05 (1 hour)

Materials & simple geometry exercise

Presenters: COSMO, Gabriele (CERN); APOSTOLAKIS, John (CERN)

Contribution ID: **12** Type: **not specified**

Generators

Wednesday, 23 January 2019 09:00 (20 minutes)

- G4VUserPrimaryGeneratorAction class
- Primary vertex and primary particle
- Built-in primary particle generators
- Interfaces with external generators

Presenter: POKORSKI, Witold (CERN)

Contribution ID: **13** Type: **not specified**

Physics - I

Wednesday, 23 January 2019 09:40 (50 minutes)

- Introduction
- G4VUserPhysicsList class
- Modular physics list
- Packaged physics lists
- Choosing appropriate physics List
- Extending a physics list
- Use of generic physics list

Presenter: IVANTCHENKO, Vladimir (CERN)

Contribution ID: **14** Type: **not specified**

Particles and processes

Wednesday, 23 January 2019 09:20 (20 minutes)

- Particles
- Processes
- What happens at a step
- Cuts

Presenter: IVANTCHENKO, Vladimir (CERN)

Contribution ID: **15** Type: **not specified**

Hands-on - III

Wednesday, 23 January 2019 10:45 (40 minutes)

Electromagnetic examples

Presenters: NOVAK, Mihaly (CERN); IVANTCHENKO, Vladimir (CERN)

Contribution ID: **16** Type: **not specified**

Electromagnetic physics - I

Wednesday, 23 January 2019 11:25 (30 minutes)

- Electromagnetic processes
- Energy loss
- Multiple scattering
- Electromagnetic models
- Electromagnetic parameters
- Electromagnetic physics constructors

Presenter: NOVAK, Mihaly (CERN)

Contribution ID: **17** Type: **not specified**

Hands-on - IV

Wednesday, 23 January 2019 11:55 (40 minutes)

Exercise on EM physics

Presenters: NOVAK, Mihaly (CERN); IVANTCHENKO, Vladimir (CERN)

Contribution ID: **18** Type: **not specified**

Hadronics physics - I

Wednesday, 23 January 2019 14:00 (1h 30m)

- Introduction (what is it, why we need it, what are the challenges)
- Overview of the hadronic physics framework
- Hadronic cross-sections
- Hadronic final-state models
- Hadronic data libraries
- Exercises

Presenter: RIBON, Alberto (CERN)

Contribution ID: **19** Type: **not specified**

Questions & Answers

Wednesday, 23 January 2019 15:45 (1h 15m)

Discussion session

Presenter: APOSTOLAKIS, John (CERN)