

















Geant4






Documents and Examples

Makoto Asai
SLAC National Accelerator Laboratory

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Geant4 Physics & Applications

A Monte Carlo toolkit for passage of particles through matter

Geant4 Hadronic Physics

Hadronic interactions involve three main regimes : high energy, with string models (Quark Gluon String (QGS), Fritiof (FtFt)), intermediate energy, with intra-nuclear cascade models (Bertini (BERT), binary (BIC)), and low energy, with precompound, Fermi break-up, fission/evaporation, capture at rest models and radioactive decays. From 20 MeV down to thermal energy neutrons are handled by means of cross-section databases, with the High Precision (HP) package.

High Energy
Quark/gluon dominating behavior

Intermediate Energy
Nucleon dominating behavior

Low Energy
Nucleus dominating behavior

Neutron simulation down to thermal energies:

Geant4 can use the same neutron data library that MCNP, verification of Geant4 and Geant4 output of outgoing neutrons produced in neutron collision.

Geant4 Electromagnetic Physics

The electromagnetic physics covers interactions of pions, muons and electrons, and ionization of all charged particles. A "standard" package offers an implementation suited for applications disregarding effects below a few ~10 keV, and a "low energy" one provides approaches (Livermore, Penelope) for more accurate modeling of atomic shell effects allowing simulation down to ~250 eV. A very low extension, Geant4-DNA, includes particle-molecule effects for an energy limit of ~10 eV. The same approach is developed for silicon.

DNA Scale Level Simulation

Project initiated by the ESA, in view of manned mission to Mars: it is a bottom-up approach of dosimetry. Physics processes are extended down to a few eV, based on particle-molecule cross-sections. The approach is applied also to silicon, for accurate simulation of Single Upset Events.

HEP Applications

High Energy Physics has been the first domain to use Geant4 in production, with the BaBar experiment. LHC experiments have been using Geant4 in detector design and are using it in physics analysis. Geant4 is also the simulation engine choice of the next generation of electron machines.

The CMS detector

The ATLAS detector

The recent High Luminosity

Responding to the simulation needs of the LHC era, with the Higgs boson hunting, had been the initial motivation of the creation of the proto-Geant4 project, RD44, in 1994.

Space Applications

Applications of Geant4 in space cover planetary scale simulation for soil level media activation studies, soil composition through X-ray re-emission, space ship simulation for radio-protection and electronic single event upset predictions, electronic chip scale simulation for accurate understanding of single event upset generation. It includes also underground, ground level or satellite cosmic ray experiments simulation.

Planetocosmos : a simulation tool for planetary scale particle transport. The red curve is a proton trajectory in the Earth magnetic field. Irradiation level around a planet, at ground level, and with related activated isotopes can then be predicted.

Very Low Energy
Atomic and molecular structures dominating

Medical Applications




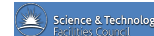
Medical Applications interest in Monte Carlo is the accuracy capability in complex structures. Geant4 is used for radio-therapy medical research fields. It is used also in optimization of brachytherapy devices, radio-protection and nuclear imaging. Large users communities exist in US, Europe and Japan. CPU performance boost allowed by Geant4 MT or by GPU prototype versions open the possibility for routine usage in treatment planning.



Proton beam line, range shifter and dose deposit simulations in HiBAC (Japan). The proton energy is 150 MeV. (Tao Li, IHE, NCS 2007 N60-1)

DICOM geometry and dose calculation with g4Macrom v1.0.1. (https://github.com/Geant4-User-Workshops/g4Macrom)

Projectile Kinetic Energy (GeV)

Projectile de Broglie λ (fm)



Overview

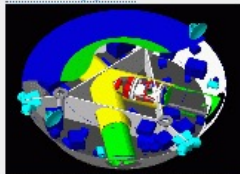
Geant4 is a toolkit for the simulation of the passage of particles through matter. Its areas of application include high energy, nuclear and accelerator physics, as well as studies in medical and space science. The three main reference papers for Geant4 are published in Nuclear Instruments and Methods in Physics Research [A 506 \(2003\) 250-303](#), IEEE Transactions on Nuclear Science [53 No. 1 \(2006\) 270-278](#) and Nuclear Instruments and Methods in Physics Research [A 835 \(2016\) 186-225](#).

Applications



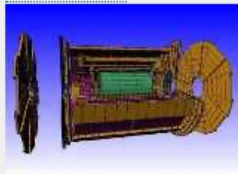
A sampling of applications, technology transfer and other uses of Geant4

User Support



Getting started, guides and information for users and developers

Publications



Validation of Geant4, results from experiments and publications

Collaboration



Who we are: collaborating institutions, [members](#), organization and legal information

News

2021-03-10

[2021 planned developments.](#)

2021-02-05

Patch-01 to release **10.7** is available from the [Download area](#).

2020-11-06

Patch-03 to release **10.6** is available from the [Download archive area](#).

Events

[Virtual] [Geant4 Beginners Course @ CERN](#), CERN (Geneva), **25-31 May 2021**.

[Virtual] 26th Geant4 Collaboration Meeting, **20-24 September 2021**.

[Past events](#)

User Support

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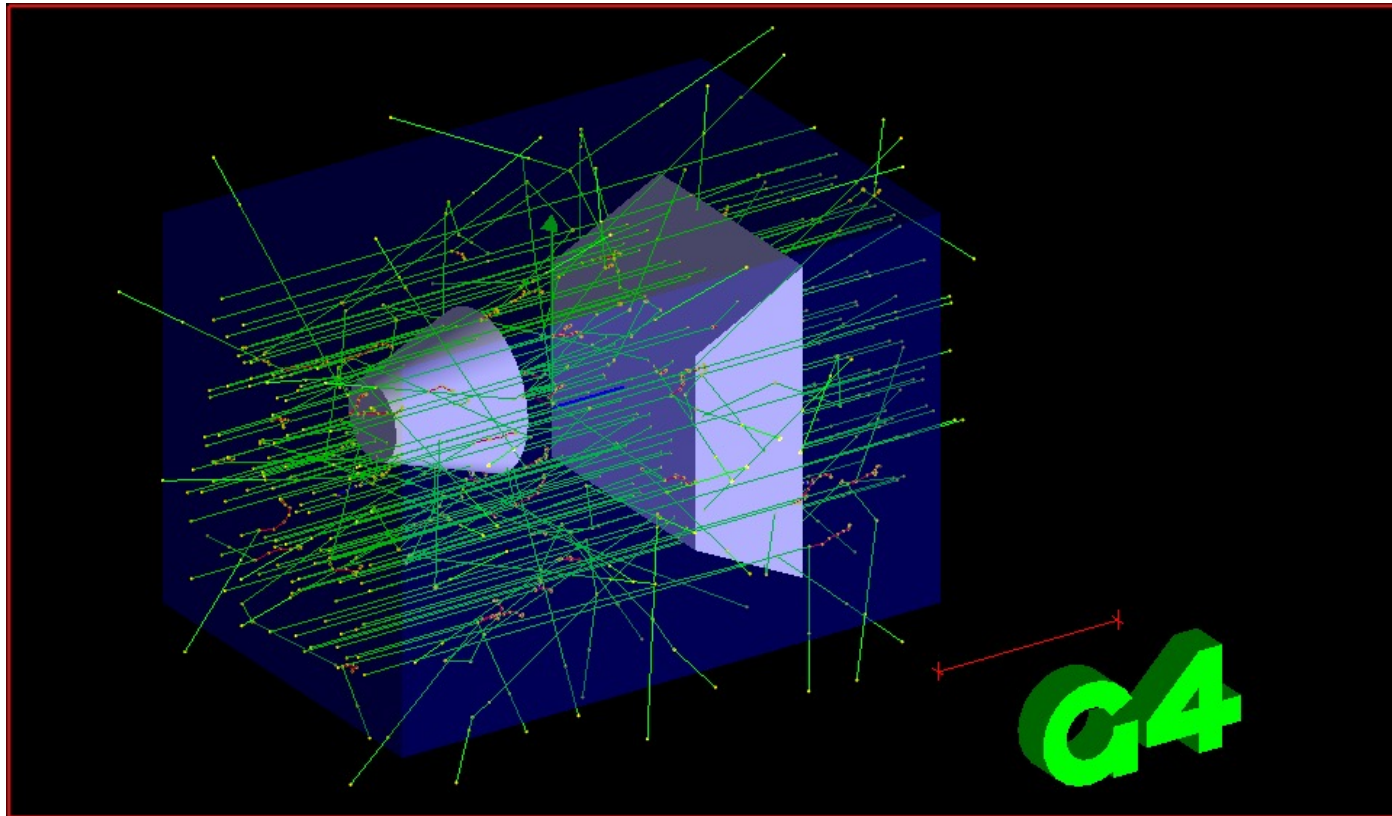
Related Links

- [Object Oriented Analysis & Design](#)
- [Archive of previous releases](#)
- [Mailing list subscription](#)
- [User requirements document](#) (pdf)
- [Technical Forum](#)

- Introduction to Geant4
 - Some blah-blah if you dare to read...
- Installation guide
 - Instruction of installing Geant4 and related libraries
 - To be covered in the next talk
- Application Developers Guide
 - Introduces new users to Geant4 toolkit
 - Describes how to set up and run a simulation application
 - Intended as an overview of the toolkit, not an exhaustive treatment
- Toolkit Developers Guide
 - Guide for users who want to extend the functionality of Geant4
 - E.g. adding new solids, adding new physics models, etc.
- Physics Reference Manual
 - Serves as a reference for the theoretical formulation, model or parameterization of the physics interactions included in Geant4
- Physics List Guide
 - Describes “pre-packaged” physics lists in the distribution

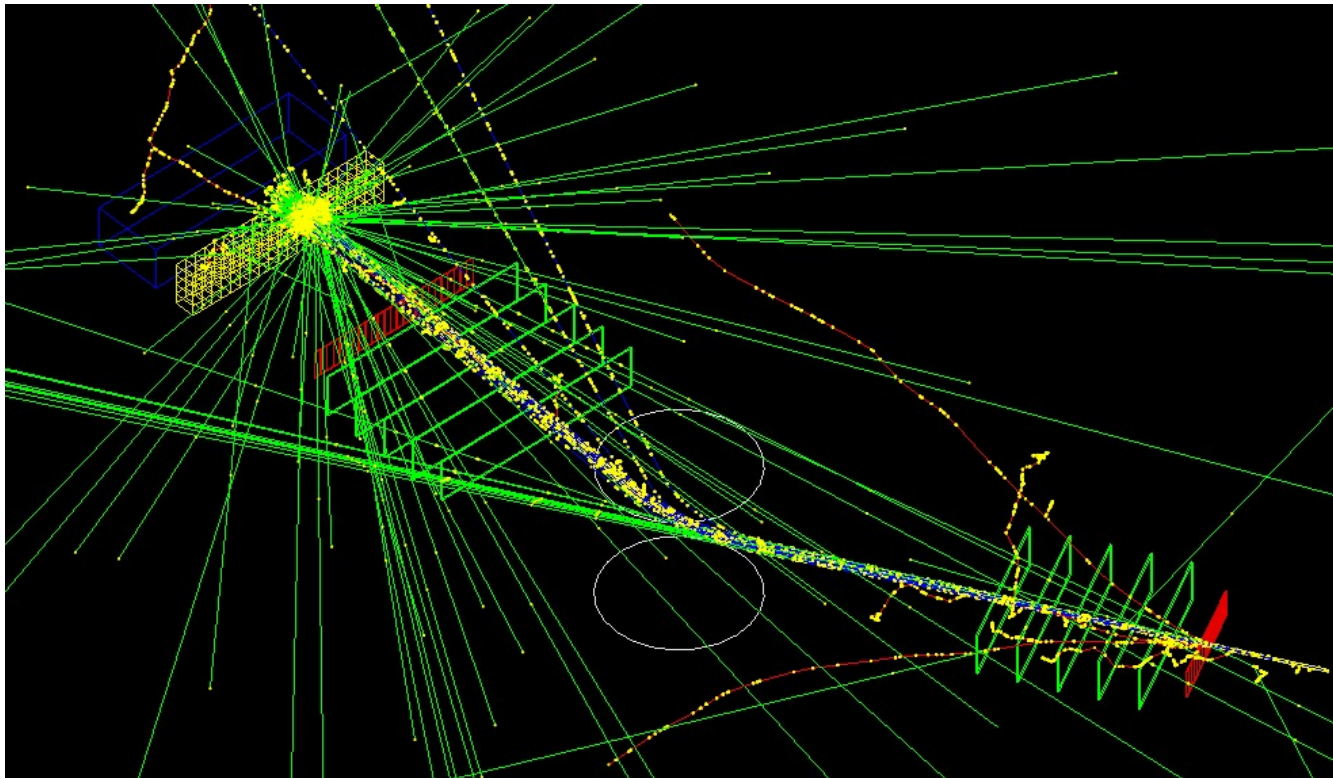
- Extensive set of examples distributed with the toolkit
- Varying complexity:
 - Basic: complete applications demonstrating simple features of toolkit – good for tutorials
 - Extended: demonstrating specific features of Geant4 and more complex use cases – some require external (non-Geant4 libraries)
 - Advanced: complex, “real life” applications with complex geometries and physics focused on specific user communities
- Documentation provided in README files in each example, and web pages

- B1
 - A few simple solids and simple placements
 - Total dose scoring in user-selected volume
 - User action classes



- B2
 - Magnetic field, parameterized placements
 - Scoring in tracker using sensitive detector and hits
 - Geant4 physics list (FTFP_BERT) with step limiter
- B3 (schematic PET system)
 - Simple placements with rotations
 - Scoring within crystals using Geant4 scorers
 - radioactive source, modular physics list using builders
- B4
 - geometry with replicas
 - multiple scoring methods
 - histograms (1D) and n-tuples saved in output file

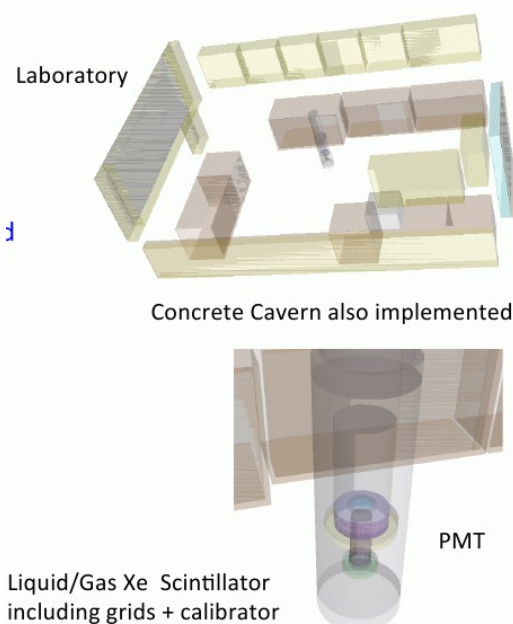
- B5 (double-arm spectrometer)
 - More complex geometry with rotation, replicas, parameterization
 - Scoring in multiple volumes with sensitive detector and hits
 - Defining local UI commands
 - Histograms (1D, 2D) and n-tuples saved in output file



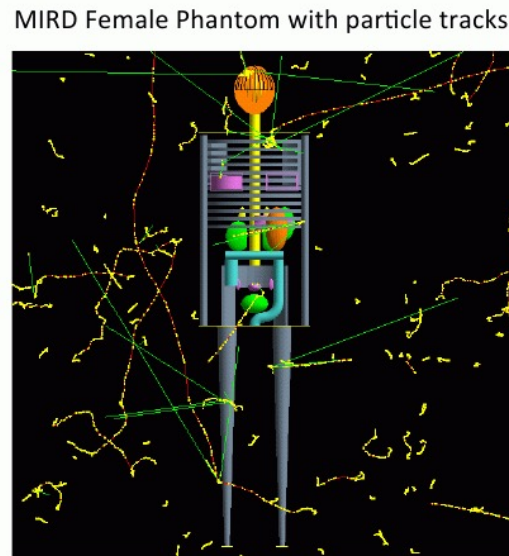
- demonstrating specific features of Geant4 and more complex use cases
 - some require external (non-Geant4 libraries)
- analysis/
- biasing/
- common/
- electromagnetic/
- errorpropagation/
- eventgenerator/
- exoticphysics/
- field/
- g3tog4/
- geometry/
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- optical/
- parallel/
- parameterisations/
- persisitency/
- polarisation/
- radioactivedecay/
- runAndEvent/
- visualization/

- Analysis – histogramming using G4tools
- Biasing – event biasing and reverse Monte Carlo
- Electromagnetic – many EM physics simulations with histogramming (some also used as part of Geant4 testing)
- Geometry – Variety of solid shapes, geometry descriptions
- Hadronic – same as EM but with hadronic models
- Medical – tools for medical applications
- Optical – optical photon generation and transport
- Parallel – examples of parallel computing
- Persistency – GDML parser
- Run and event – run and event control, sensitive detector, command-based scorer
- Visualization – specific visualization features and graphics customizations

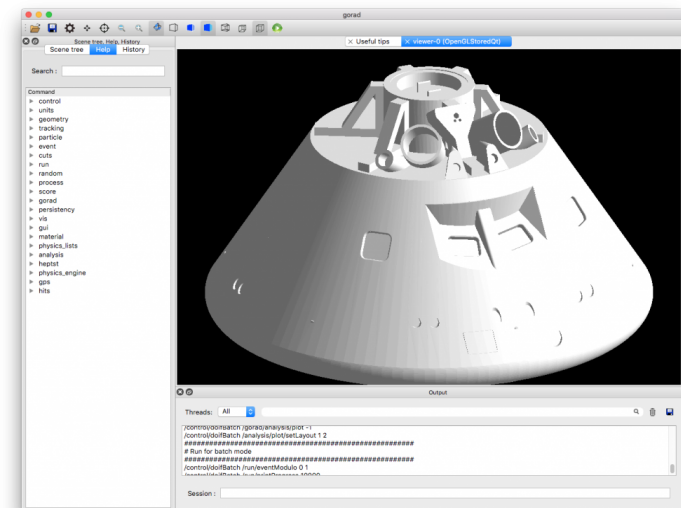
- Complex, “real life” applications with complex geometries and physics focused on specific user communities
- 27 examples
 - https://geant4.web.cern.ch/collaboration/working_groups/advanced_examples



Underground physics



Human phantom



Gorad

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Geant4

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Geant4 10.7

first released 4 December 2020 (patch-01, released 5 February 2021)

The Geant4 source code is freely available. See the [licence conditions](#).

Please read the [Release Notes](#) before downloading or using this release. The patch below contains bug fixes to release 10.7, we suggest you to download and apply the latest patch for release 10.7 (see the additional notes for [patch-01](#), or download the complete source with the patch applied; in any case, it is required to apply a full rebuild of the libraries.

Source files

Please choose the archive best suited to your system and archiving tool:

Download	GNU or Linux tar format, compressed using gzip (34.5Mb, 36217226 bytes) <i>After downloading, unpack using GNU tar.</i>
Download	ZIP format (48.9Mb, 51279540 bytes) <i>After downloading, unpack using e.g. WinZip.</i>

Please choose the archive best suited to your system and archiving tool:

Data files (*)

For specific, optional physics processes some of the following files are required. The file format is compatible with Unix, GNU, and Windows utilities.

Download	G4NDL4.6, Neutron data files (with thermal cross-sections) – version 4.6 (572.1Mb, 599862135 bytes)
Download	G4EMLOW7.13, data files for low energy electromagnetic processes – version 7.13 (284.8Mb, 298636910 bytes)
Download	G4PhotonEvaporation5.7, data files for photon evaporation – version 5.7 (9.6Mb, 10089240 bytes)
Download	G4RadioactiveDecay5.6, data files for radioactive decay hadronic processes – version 5.6 (1.0Mb, 1059792 bytes)
Download	G4SAIDDATA2.0, data files from evaluated cross-sections in SAID data-base – version 2.0 (37.6kb, 38502 bytes)
Download	G4PARTICLEXS3.1.1, data files for evaluated particle cross-sections on natural composition of elements – version 3.1.1 (8.2Mb, 8613102 bytes)

Related Links

- [Previous Releases of Geant4](#) (since release 9.6).
- [LXR source code browser](#) .
- [GitHub](#) .
- [GitLab @ CERN](#) .

Geant4 Cross Reference

Search Menu:

[geant4/](#) Browse the source code tree.

[File Name Search](#)
Search for files by name (case sensitive).

[Full-Text Search](#)
Search through all the text.

[Identifier Search](#)
Find a class, method, variable, etc.

Hi,

This is an interactive viewing and searching facility for the Geant4 source code.

It offers:

Source-tree browsing and file name search to easily find source files and navigate through the source directories.

Full-text indexing for fast retrieval of source files containing a given word or pattern.

Identifier cross-reference for fully hyperlinked source code. The names of classes, methods, and data can be clicked on to find the source files where they are defined and used.

The full-text indexing and retrieval are implemented using [Glimpse](#), so all the capabilities of Glimpse are available. Please see [Glimpse document](#) for details. Note that glimpse syntax is available for text and identifier searches. For file name search, please use regular expression.

Note

All source files are rendered into HTML. Do not attempt to download the Geant4 source code from this site!

Links



[Yet another version of Geant4 LXR](#) (editor's cut)
[Geant4 Reference Guide](#) (Doxygen)

Geant4 Cross Reference

Cross-Referencing [Geant4](#) [Geant4/run/src/](#)

Version: [ReleaseNotes](#) [\[1.0 \]](#) [\[1.1 \]](#) [\[2.0 \]](#) [\[3.0 \]](#) [\[3.1 \]](#) [\[3.2 \]](#) [\[4.0 \]](#) [\[4.0.p1 \]](#) [\[4.0.p2 \]](#) [\[4.1 \]](#) [\[4.1.p1 \]](#) [\[5.0 \]](#) [\[5.0.p1 \]](#) [\[5.1 \]](#) [\[5.1.p1 \]](#) [\[5.2 \]](#) [\[5.2.p1 \]](#) [\[5.2.p2 \]](#) [\[6.0 \]](#) [\[6.0.p1 \]](#) [\[6.1 \]](#) [\[6.2 \]](#) [\[6.2.p1 \]](#) [\[6.2.p2 \]](#) [\[7.0 \]](#) [\[7.0.p1 \]](#) [\[7.1 \]](#) [\[7.1.p1 \]](#) [\[8.0 \]](#) [\[8.0.p1 \]](#) [\[8.1 \]](#) [\[8.1.p1 \]](#) [\[8.1.p2 \]](#) [\[8.2 \]](#) [\[8.2.p1 \]](#) [\[8.3 \]](#) [\[8.3.p1 \]](#) [\[8.3.p2 \]](#) [\[9.0 \]](#) [\[9.0.p1 \]](#) [\[9.0.p2 \]](#) [\[9.1 \]](#) [\[9.1.p1 \]](#) [\[9.1.p2 \]](#) [\[9.1.p3 \]](#) [\[9.2 \]](#) [\[9.2.p1 \]](#) [\[9.2.p2 \]](#) [\[9.2.p3 \]](#) [\[9.2.p4 \]](#) [\[9.3 \]](#) [\[9.3.p1 \]](#) [\[9.3.p2 \]](#) [\[9.4 \]](#) [\[9.4.p1 \]](#) [\[9.4.p2 \]](#) [\[9.4.p3 \]](#) [\[9.4.p4 \]](#) [\[9.5 \]](#) [\[9.5.p1 \]](#) [\[9.5.p2 \]](#) [\[9.6 \]](#) [\[9.6.p1 \]](#) [\[9.6.p2 \]](#) [\[9.6.p3 \]](#) [\[9.6.p4 \]](#) [\[10.0 \]](#) [\[10.0.p1 \]](#) [\[10.0.p2 \]](#) [\[10.0.p3 \]](#) [\[10.0.p4 \]](#) [\[10.1 \]](#) [\[10.1.p1 \]](#) [\[10.1.p2 \]](#) [\[10.1.p3 \]](#) [\[10.2 \]](#) [\[10.2.p1 \]](#) [\[10.2.p2 \]](#) [\[10.2.p3 \]](#) [\[10.3 \]](#) [\[10.3.p1 \]](#) [\[10.3.p2 \]](#) [\[10.3.p3 \]](#) [\[10.4 \]](#) [\[10.4.p1 \]](#) [\[10.4.p2 \]](#) [\[10.4.p3 \]](#) [\[10.5 \]](#) [\[10.5.p1 \]](#) [\[10.6 \]](#) [\[10.6.p1 \]](#) [\[10.6.p2 \]](#) [\[10.6.p3 \]](#) [\[10.7 \]](#) [\[10.7.p1 \]](#)

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	Name	Size	Last modified (GMT)	Description
	Parent directory		2021-02-05 11:17:16	
	G4AdjointPrimaryGeneratorAction.cc	16774 bytes	2021-02-05 11:17:16	
	G4AdjointSimManager.cc	29078 bytes	2021-02-05 11:17:16	
	G4AdjointSimMessenger.cc	16629 bytes	2021-02-05 11:17:16	
	G4ExceptionHandler.cc	9277 bytes	2021-02-05 11:17:16	
	G4MSSteppingAction.cc	2651 bytes	2021-02-05 11:17:16	
	G4MTRunManager.cc	23161 bytes	2021-02-05 11:17:16	
	G4MTRunManagerKernel.cc	9557 bytes	2021-02-05 11:17:16	
	G4MatScanMessenger.cc	10488 bytes	2021-02-05 11:17:16	
	G4MaterialScanner.cc	8132 bytes	2021-02-05 11:17:16	
	G4MultiRunAction.cc	2992 bytes	2021-02-05 11:17:16	
	G4PhysicsListHelper.cc	35052 bytes	2021-02-05 11:17:16	
	G4PhysicsListOrderingParamater.cc	2383 bytes	2021-02-05 11:17:16	
	G4PhysicsListWorkspace.cc	4245 bytes	2021-02-05 11:17:16	
	G4RNGHelper.cc	2874 bytes	2021-02-05 11:17:16	
	G4Run.cc	2791 bytes	2021-02-05 11:17:16	
	G4RunManager.cc	40249 bytes	2021-02-05 11:17:16	
	G4RunManagerKernel.cc	38296 bytes	2021-02-05 11:17:16	
	G4RunMessenger.cc	29254 bytes	2021-02-05 11:17:16	
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	G4UserRunAction.cc	2709 bytes	2021-02-05 11:17:16	
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	G4UserWorkerThreadInitialization.cc	5307 bytes	2021-02-05 11:17:16	
	G4VModularPhysicsList.cc	13675 bytes	2021-02-05 11:17:16	
	G4VPersistencyManager.cc	2056 bytes	2021-02-05 11:17:16	
	G4VPhysicsConstructor.cc	4768 bytes	2021-02-05 11:17:16	
	G4VUserActionInitialization.cc	2947 bytes	2021-02-05 11:17:16	

Geant4 Cross Reference

Cross-Referencing [Geant4](#) [Geant4/run/src/G4RunManager.cc](#)

Version: [[ReleaseNotes](#)] [[1.0](#)] [[1.1](#)] [[2.0](#)] [[3.0](#)] [[3.1](#)] [[3.2](#)] [[4.0](#)] [[4.0.p1](#)] [[4.0.p2](#)] [[4.1](#)] [[4.1.p1](#)] [[5.0](#)] [[5.0.p1](#)] [[5.1](#)] [[5.1.p1](#)] [[5.2](#)] [[5.2.p1](#)] [[5.2.p2](#)] [[6.0](#)] [[6.0.p1](#)] [[6.1](#)] [[6.2](#)] [[6.2.p1](#)] [[6.2.p2](#)] [[7.0](#)] [[7.0.p1](#)] [[7.1](#)] [[7.1.p1](#)] [[8.0](#)] [[8.0.p1](#)] [[8.1](#)] [[8.1.p1](#)] [[8.1.p2](#)] [[8.2](#)] [[8.2.p1](#)] [[8.3](#)] [[8.3.p1](#)] [[8.3.p2](#)] [[9.0](#)] [[9.0.p1](#)] [[9.0.p2](#)] [[9.1](#)] [[9.1.p1](#)] [[9.1.p2](#)] [[9.1.p3](#)] [[9.2](#)] [[9.2.p1](#)] [[9.2.p2](#)] [[9.2.p3](#)] [[9.2.p4](#)] [[9.3](#)] [[9.3.p1](#)] [[9.3.p2](#)] [[9.4](#)] [[9.4.p1](#)] [[9.4.p2](#)] [[9.4.p3](#)] [[9.4.p4](#)] [[9.5](#)] [[9.5.p1](#)] [[9.5.p2](#)] [[9.6](#)] [[9.6.p1](#)] [[9.6.p2](#)] [[9.6.p3](#)] [[9.6.p4](#)] [[10.0](#)] [[10.0.p1](#)] [[10.0.p2](#)] [[10.0.p3](#)] [[10.0.p4](#)] [[10.1](#)] [[10.1.p1](#)] [[10.1.p2](#)] [[10.1.p3](#)] [[10.2](#)] [[10.2.p1](#)] [[10.2.p2](#)] [[10.2.p3](#)] [[10.3](#)] [[10.3.p1](#)] [[10.3.p2](#)] [[10.3.p3](#)] [[10.4](#)] [[10.4.p1](#)] [[10.4.p2](#)] [[10.4.p3](#)] [[10.5](#)] [[10.5.p1](#)] [[10.6](#)] [[10.6.p1](#)] [[10.6.p2](#)] [[10.6.p3](#)] [[10.7](#)] [[10.7.p1](#)]

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```

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24 // *****
25 //
26 //
27 //
28 //
29
30 // On Sun, to prevent conflict with ObjectSpace, G4Timer.hh has to be
31 // loaded *before* globals.hh...
32 #include "G4Timer.hh"
33
34 #include "G4MTRunManagerKernel.hh"
35 #include "G4RunManager.hh"
36 #include "G4RunManagerKernel.hh"
37 #include "G4WorkerRunManagerKernel.hh"
38
39 #include "G4ApplicationState.hh"
40 #include "G4Material.hh"
41 #include "G4ParallelWorldProcessStore.hh"
42 #include "G4ParticleTable.hh"
43 #include "G4ProcessTable.hh"

```




























```

325 void G4RunManager::BeamOn(G4int n_event, const char* macroFile, G4int n_select)
326 {
327     if(n_event <= 0)
328     {
329         fakeRun = true;
330     }
331     else
332     {
333         fakeRun = false;
334     }
335     G4bool cond = ConfirmBeamOnCondition();
336     if(cond)
337     {
338         numberOfEventToBeProcessed = n_event;
339         numberOfEventProcessed      = 0;
340         ConstructScoringWorlds();
341         RunInitialization();
342         DoEventLoop(n_event, macroFile, n_select);
343         RunTermination();
344     }
345     fakeRun = false;
346 }
347
348 G4bool G4RunManager::ConfirmBeamOnCondition()
349 {
350     G4StateManager* stateManager = G4StateManager::GetStateManager();
351     G4ApplicationState currentState = stateManager->GetCurrentState();
352     if(currentState != G4State_PreInit && currentState != G4State_Idle)
353     {
354         G4cerr << "Illegal application state - BeamOn() ignored." << G4endl;
355         return false;
356     }
357     if(!initializedAtLeastOnce)
358     {
359         G4cerr << " Geant4 kernel should be initialized" << G4endl;
360         G4cerr << "before the first BeamOn(). - BeamOn ignored." << G4endl;
361         return false;
362     }
363     if(!geometryInitialized || !physicsInitialized)
364     {
365         if(verboseLevel > 0)
366         {
367             G4cout << "Start re-initialization because " << G4endl;
368             if(!geometryInitialized)
369                 G4cout << " Geometry" << G4endl;
370             if(!physicsInitialized)
371                 G4cout << " Physics processes" << G4endl;
372             G4cout << "has been modified since last Run." << G4endl;
373         }
374         Initialize();
375     }
376     return true;
377 }
378
379 void G4RunManager::RunInitialization()
380 {
381     if(!(kernel->RunInitialization(fakeRun)))
382         return;
383     runAborted = false;

```

User Forum – Q/A by users and developers



all categories ▾					Latest		New (10)		Unread (1)		Top		Categories		+ New Topic	
☰ Topic							Replies		Views		Activity					
Total energy deposited in the detector ■ Particles, Track, Event, Run and Biasing							 		3		21		24m			
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Question related to the Output using the GPS? ■ Geometry, Fields and Transportation							 		15		58		3h			
Relocating a particle by a continuous process: exception • ■ Geometry, Fields and Transportation							 		2		5		3h			
Polyhedron warning when creating parameterised spherical shell ■ Geometry, Fields and Transportation							 		3		42		3h			
☑ Segmentation Fault vs libG4graphics? ■ Getting Started							    		18		195		4h			
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Warnings during compilation, related to /G4LEPTSElossDistr. and G4LEPTSDiffXS ■ Getting Started							 		2		12		7h			
Geant4-DNA, chem6 • ■ Physics Processes, Models and Cross Sections									0		10		8h			

Neutron production from a 5 MeV proton beam on a beryllium target

■ Physics Processes, Models and Cross Sections



This is the first time shihkailin has posted — let's welcome them to our community!



Jun 8



shihkailin

1d

Hi,

I am trying to generate neutrons from bombarding a 5 MeV proton beam on a beryllium target. I have tried many different physics lists such as FTFP_BERT, QGSP_BERT, and QBBC, etc.

None of the lists gives me good enough neutron kinematics compared with measurements. In particular, with a 1 mA proton beam on beryllium, I am expecting $3e12$ neutrons. However, I only get 1/4 neutron flux with the QBBC physics list, which is already the list with the most generated neutrons.

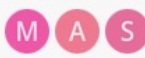
Would experts here recommend a physics list, or an example for me to generate neutrons that best match measurements?

Thanks,
Shih-Kai.

1 Reply ▾



created 1d last reply 6h 3 replies 21 views 4 users



Selviever

Hello!

May be you will find this review of physics lists helpful:

<https://geant4.web.cern.ch/node/155>

Pay special attention to lists with the "_HP" at the end, which indicates using a high precision neutron package.

Note: physics lists with _HP consume a lot more CP-time. For example, in my special case one event with QGSP_BERT generated approximately ten times faster then with QGSP_BERT_HP

Note :

- Best effort basis
- Please search if someone else had already asked a similar question before you post yours.



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55 problems found.

ID	Product	Comp ▲	Assignee	Status	Resolution	Summary	Changed ▼
2379	Examples	electrom	Vladimir.Ivantchenko@cern.ch	ASSI	---	World volume size messenger behaves differently depending upon when the absorber size is changed	10:54:25
2368	Geant4	run	asai@slac.stanford.edu	ASSI	---	Issue with Reproducibility	Tue 09:58
2373	Geant4	persiste	Witold.Pokorski@cern.ch	NEW	---	the gdml file that's dumped by the G4GDMLParser is not a valid	2021-06-02
2372	Geant4	processe	Vladimir.Ivantchenko@cern.ch	NEW	---	Scintillation process is applied only on charged particles.	2021-05-27
2367	Geant4	processe	dennis.herbert.wright@cern.ch	ASSI	---	Beta-ray energy spectrum shows stepping shape.	2021-05-23
2369	Geant4	geometry	Pedro.Arce@cern.ch	NEW	---	#2 G4PhantomParameterisation still leads to many killed particles, which produces erroneous results.	2021-05-17
2329	Geant4	processe	Vladimir.Ivantchenko@cern.ch	ASSI	---	Inconsistency between electron energy loss formula in PhysicsReferenceManual and G4 code	2021-05-12
2354	Geant4	processe	Vladimir.Ivantchenko@cern.ch	NEW	---	segmentation fault caused when processes are disabled via the user interface.	2021-05-11
2338	Examples	undergro	alexander.howard@cern.ch	ASSI	---	executable crashes when running included macros; corrupt Root files	2021-05-10
2280	Geant4	geometry	John.Apostolakis@cern.ch	ASSI	---	Inconsistent definition of magnetic field for backward error propagation	2021-05-10
2360	Geant4	processe	Alberto.Ribon@cern.ch	ASSI	---	Strange proton energy distributions after a target in geant4 >= 10.5	2021-05-10
2365	Geant4	processe	dennis.herbert.wright@cern.ch	ASSI	---	Improve the branch ratio consistency in RDM: use the enum instead of number	2021-05-10
2300	Geant4	processe	dennis.herbert.wright@cern.ch	ASSI	---	Incorrect output energy using LEND	2021-05-08
2366	Geant4	processe	Vladimir.Ivantchenko@cern.ch	ASSI	---	No transmission asymmetries when using multi-threading mode	2021-05-08
2314	Geant4	geometry	Pedro.Arce@cern.ch	ASSI	---	G4RegularNavigation is broken	2021-04-20
2352	Geant4	processe	emilio.mendoza@ciemat.es	ASSI	---	Gamma Spectrum for Neutron Capture on Gd	2021-04-16
2353	Geant4	physics_	Vladimir.Ivantchenko@cern.ch	ASSI	---	Aborted Events with some EM Options	2021-04-13
2355	Geant4	processe	Vladimir.Ivantchenko@cern.ch	ASSI	---	Abnormal final state in ion-ion collision	2021-04-04
2279	Geant4	processe	Vladimir.Ivantchenko@cern.ch	ASSI	---	problem with dexcitationIgnoreCut	2021-03-31
2331	Geant4	cmake	Ben.Morgan@warwick.ac.uk	ASSI	---	Add optional soversion	2021-03-30
2351	Document	Installa	alexander.howard@cern.ch	NEW	---	Removed from Homebrew	2021-03-30
2346	Geant4	material	Vladimir.Ivantchenko@cern.ch	ASSI	---	Mess in density effect data for hydrogen and helium	2021-03-23
2333	Geant4	processe	dennis.herbert.wright@cern.ch	ASSI	---	Inelastic excitation energy is set to 0 when inelastic collision energy is below 20 keV	2021-03-11
2328	Geant4	processe	dennis.herbert.wright@cern.ch	ASSI	---	Energy conservation law is not obeyed	2021-03-01
2335	Geant4	analysis	ivana.ipno.in2p3.fr	ASSI	---	AnalysisManager fails to find ntuples	2021-02-26
2339	Geant4	material	Vladimir.Ivantchenko@cern.ch	ASSI	---	Different material parameters in G4NistMaterialBuilder and G4DensityEffectData	2021-02-25
2334	Geant4	material	Vladimir.Ivantchenko@cern.ch	ASSI	---	Code is inconsistent with Physics Reference Manual and original source (density correction)	2021-02-22
2332	Geant4	processe	dennis.herbert.wright@cern.ch	ASSI	---	incorrect data in G4NDL	2021-02-17

To sum up

- **Installation, Application, Toolkit and Physics Guides** take you from making your first Geant4 installation to developing your own application to developing advanced Geant4 features
- Three levels of examples: ranging from very easy to complex
 - basic – getting started
 - extended – exploring specific features of Geant4
 - advanced – real world applications
- User support includes:
 - cross reference code browser
 - user forum is available for sharing ideas, asking questions
 - bug report and tracking