

# Geant 4

## General introduction of version 10.1 and prospect

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NATIONAL  
ACCELERATOR  
LABORATORY



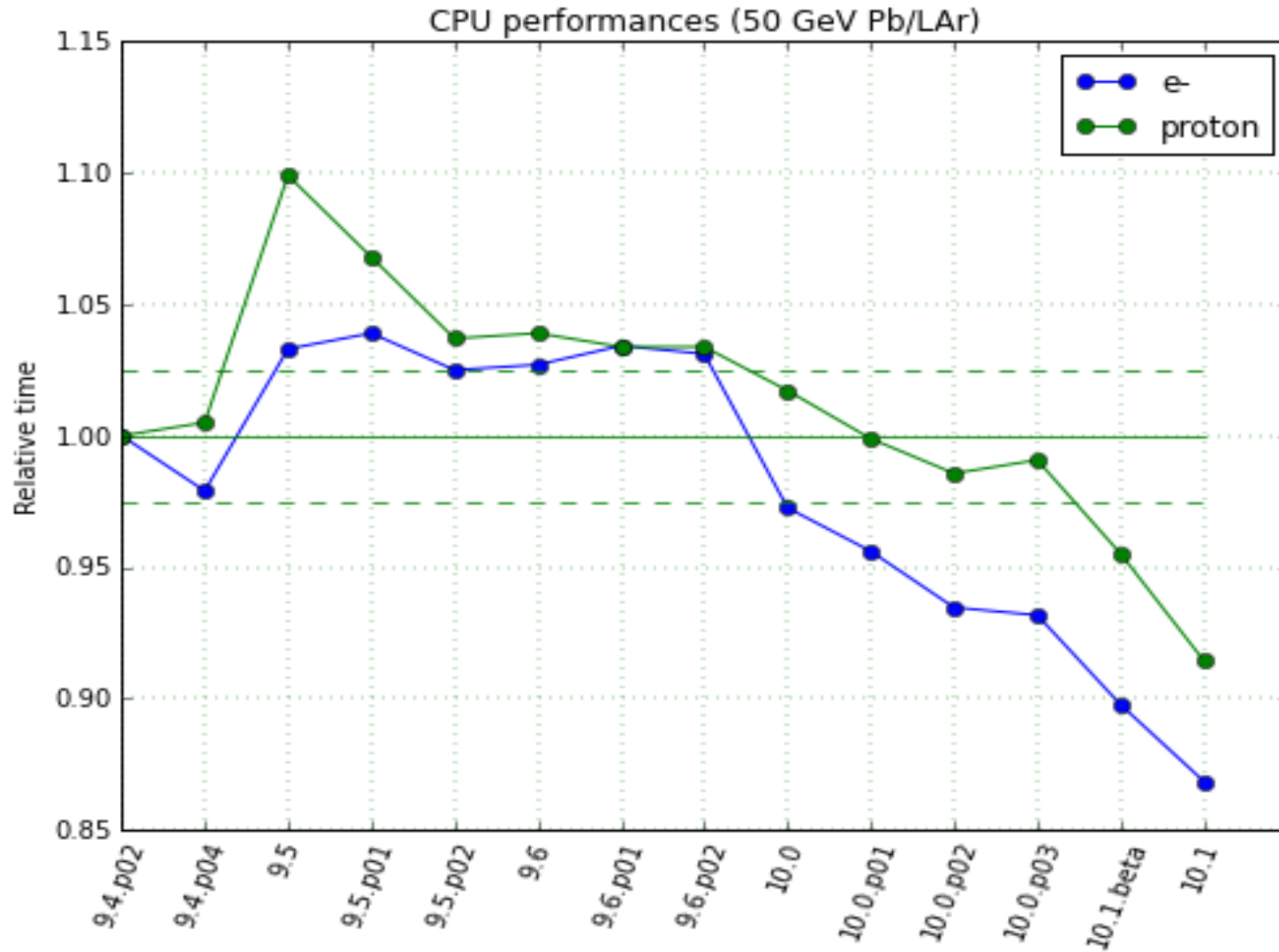
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**ENERGY**

Office of Science

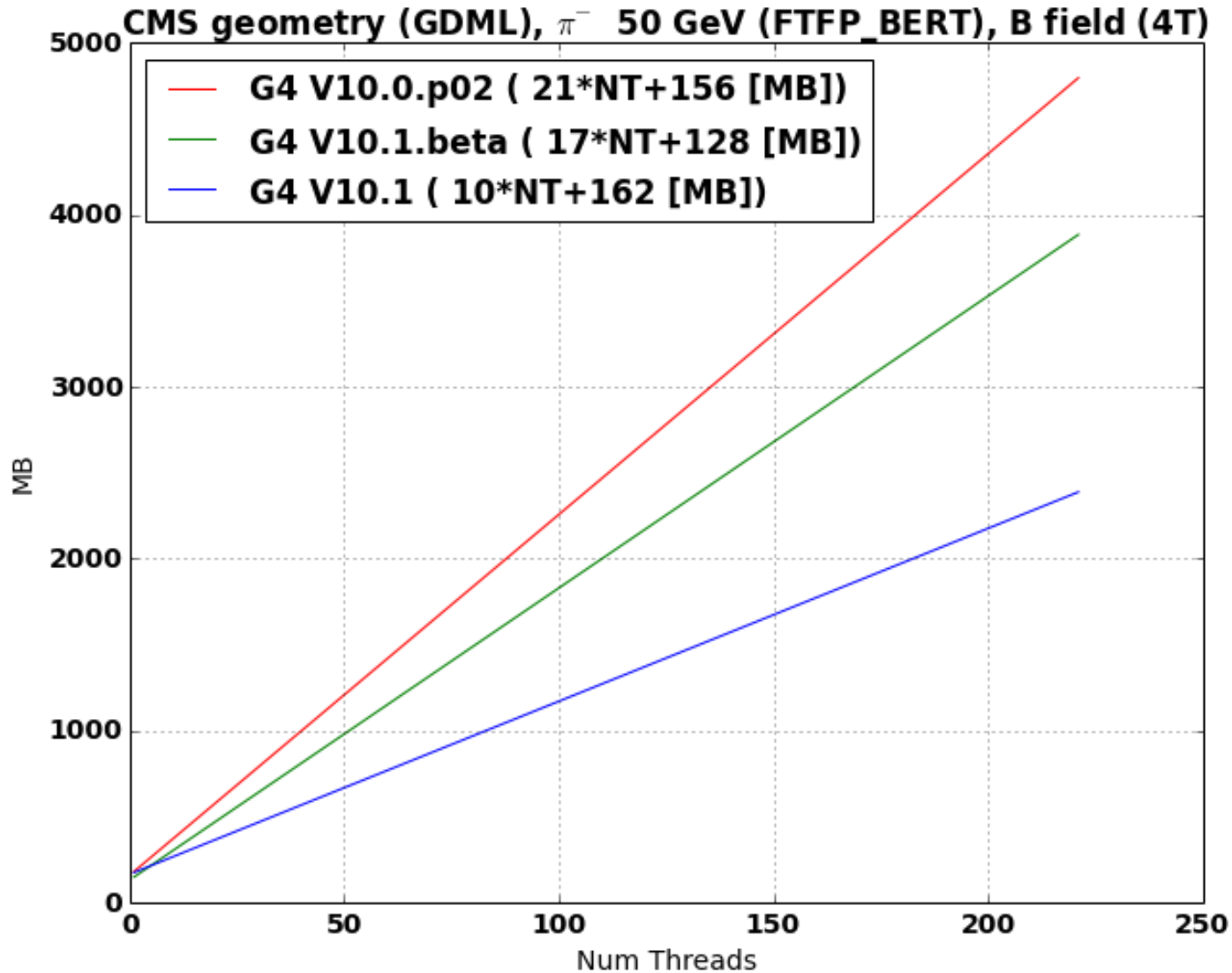
- Released on December 5<sup>th</sup>, 2014
- Significant improvements in both computing speed and memory consumption.
  - See following slides.
- New features include:
  - General Particle Source is now compatible to multithread
  - G4SynchrotronRadiation process for all charged particles
  - Phonon physics with the concept of crystal structure
  - Mass width in decays of short-lived hadrons
    - Daughter hadrons have dynamic mass based on Breit-Wigner distribution
  - Both Fritiof (FTF) and Quark-Gluon-String (QGS) models have been significantly improved.
  - See following presentations for details
- The new version of CLHEP can be built supporting the C++11 Standard, on compilers that support C++11.
  - When C++11 option is chosen in a multi-threaded build of Geant4, this triggers the use of the Standard `thread_local` and `atomic` keywords.
- New platform being regularly tested
  - Intel Xeon Phi with Intel-icc 15.0

# Throughput in sequential mode

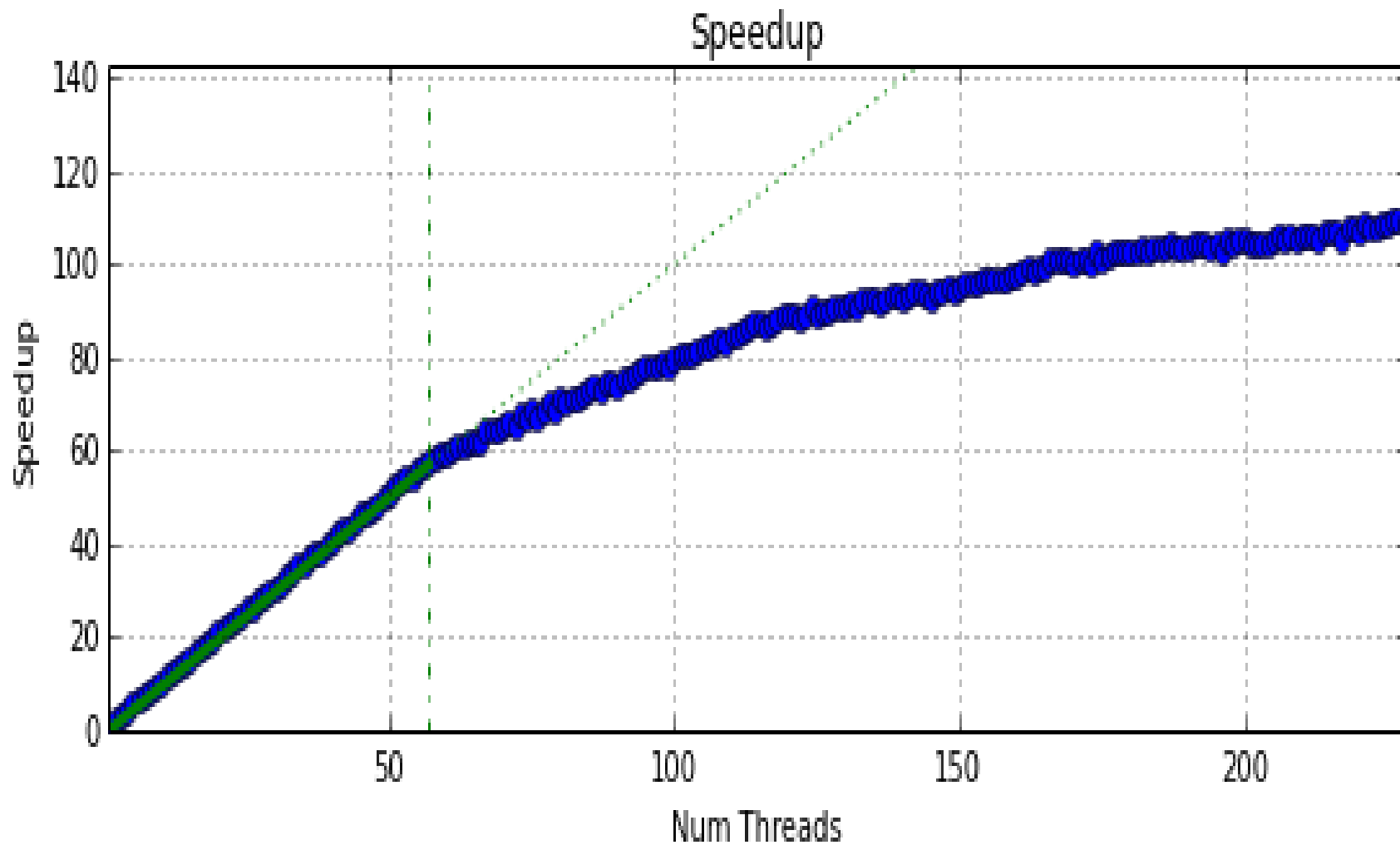
Obtained with simple 'slab' geometry



# Memory consumption in MT mode



Obtained with CMS geometry



# Recent releases

- Nov 30<sup>th</sup>, '12 – Geant4 version 9.6 release
  - Mar 20<sup>th</sup>, '14 - Geant4 9.6-patch03 release
- Dec 6<sup>th</sup>, '13 – Geant4 version 10.0 release
  - Oct 31<sup>st</sup>, '14 - Geant4 10.0-patch03 release ← **Most recent patch release**
- Dec 5<sup>th</sup>, '14 – Geant4 version 10.1 release ← **Current version**
- Version 10.0 will be supported with retroactive patches if needed at least for 2015.
- We need to understand how long we need to continue supporting version 9.6.

- Releases
  - Geant4 version 10.2 release : early December 2015 (date t.b.c.)
    - Version 10.2-beta : end of June 2015
  - Patch releases will be made as needed
- Next Technical Forum in March, 2015 (date/location t.b.c.)
  - Main topic : 2015 work plan
  - User's input on requirements is welcome
    - New/improved functionalities, supported platforms, etc.
- Collaboration events
  - 11<sup>th</sup> Space Users Workshop, Aug 26-Aug 28, 2015 @ Hiroshima, Japan
  - 20<sup>th</sup> Collaboration meeting, Sep 28-Oct 2, 2015 @ Fermi Lab, IL, USA
  - Tutorials
    - Apr 2015 @ MC2015 conference, Nashville, TN, USA
    - May 2015 @ 12<sup>th</sup> Seminar for Nuclear, Sub-nuclear and Applied Physics, Porto Conte, Alghero, Italy