GEANT4 Simulation of the abBA/Nab Spectrometer: Progress Report

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- We used GEANT4 version 6.2.p01 (free ;8-)

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- New modules can be easily added by users without intimate knowledge of over-all code structure

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- Individual detector components can be positioned or switched off

Spectrometer Geometry II

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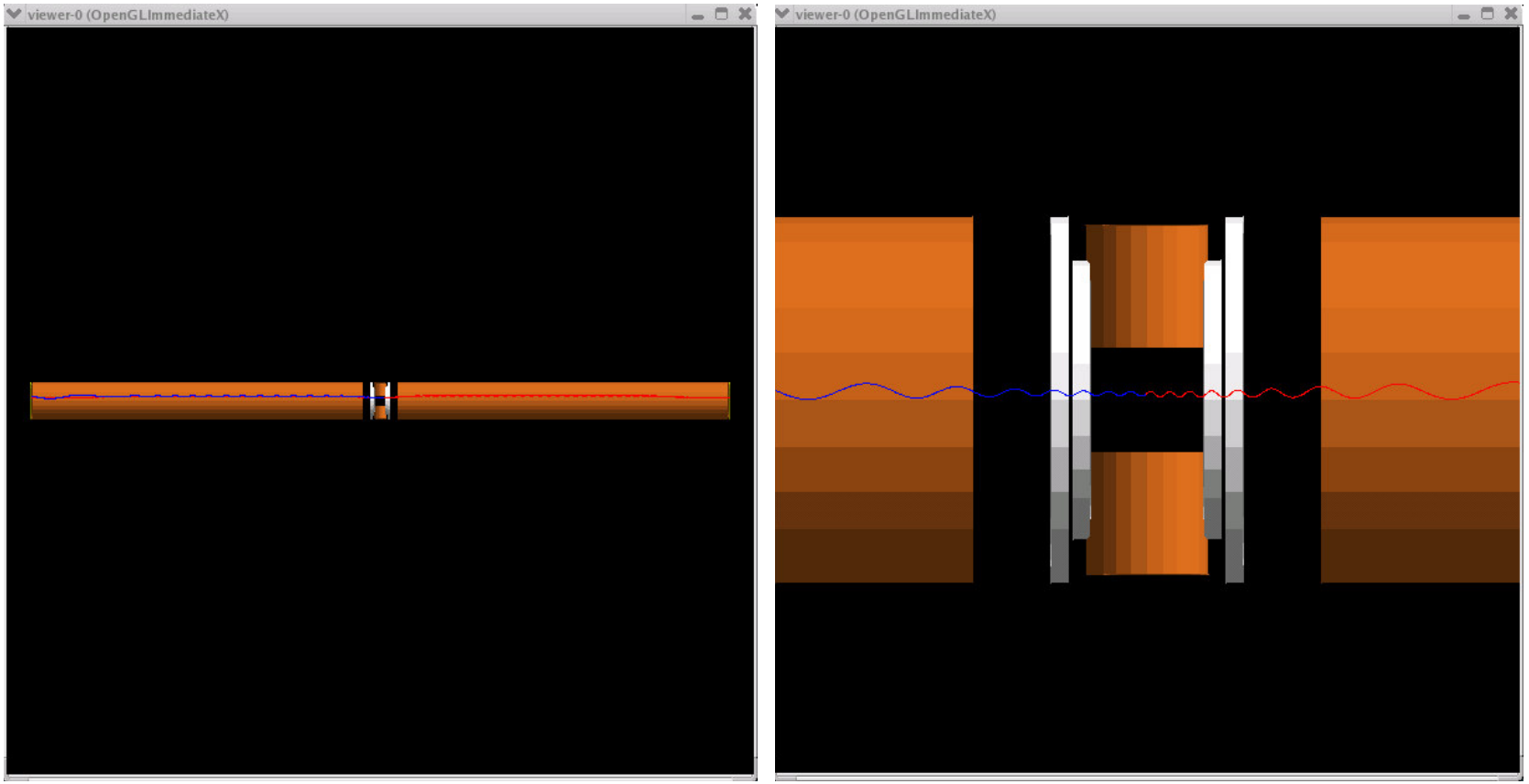

- Geometry of magnetic spectrometer with two split pairs, transport solenoid and polarized neutron beam coils

Electric and Magnetic Fields

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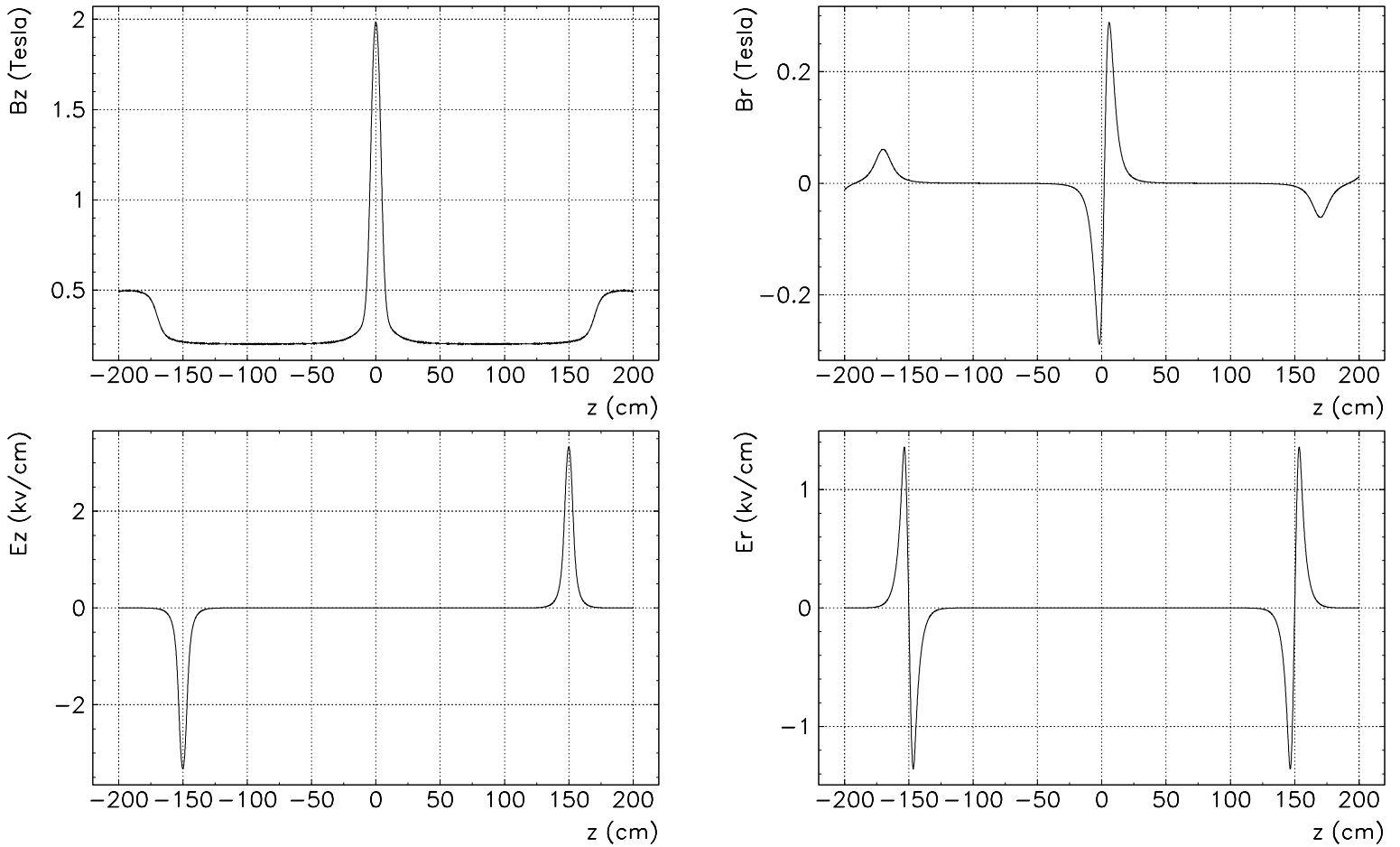

- Axial and radial components of Nab's magnetic and electric fields used in GEANT4 charged particle transport and spin tracking

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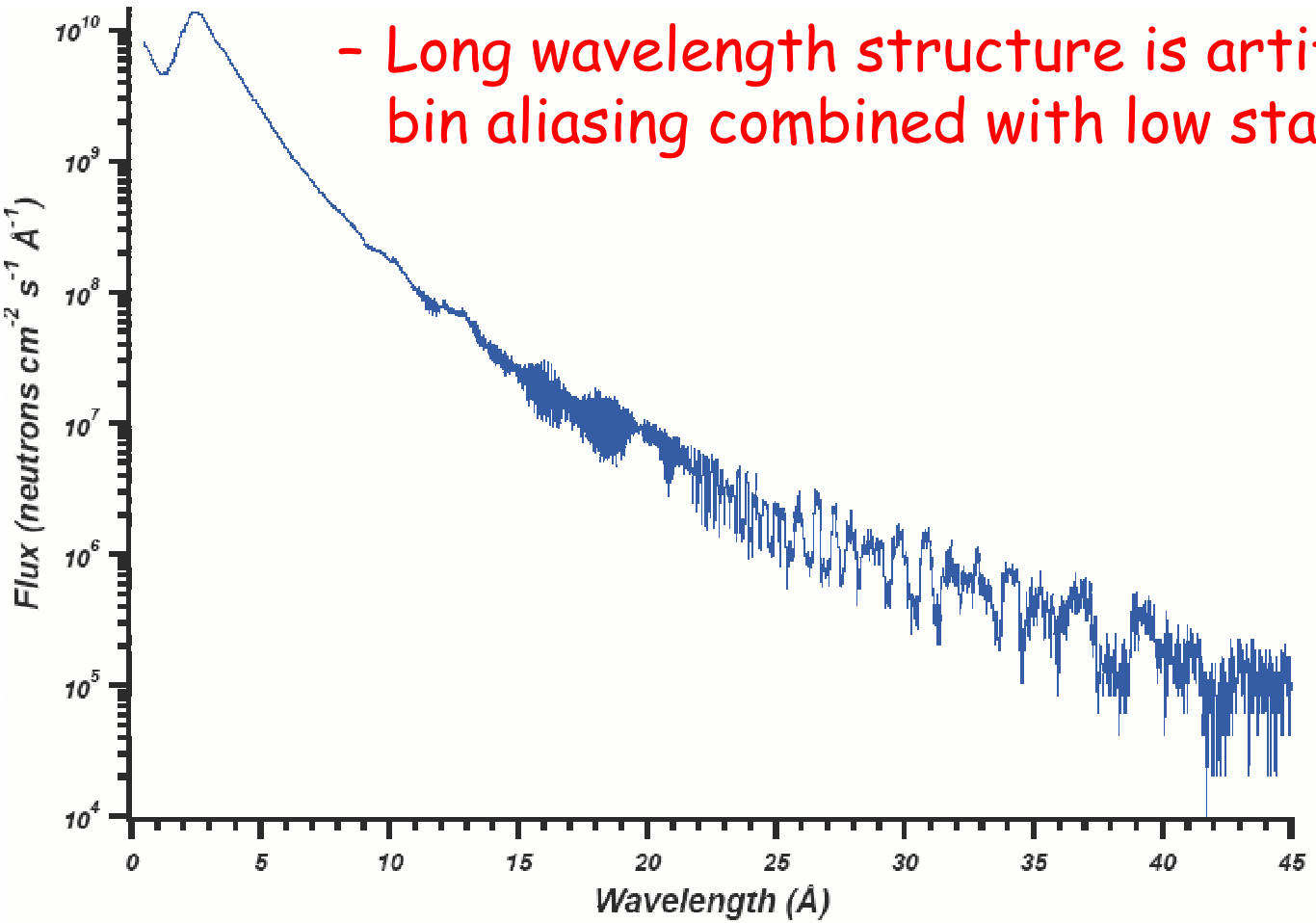

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- 0.1 mm step size, processing time ~ 0.2 sec/per event

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- Detector energy thresholds, energy/time resolutions, pedestals, random coincidences, and noise

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- Single event display using OpenGL or Wired

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- Practical options are

  (1) to use parallelized G4 code on Linux clusters or

  (2) to run a code on a supercomputer

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- Test the parallelized code