Status of STAR Detector Simulations

Pavel Nevski

BNL

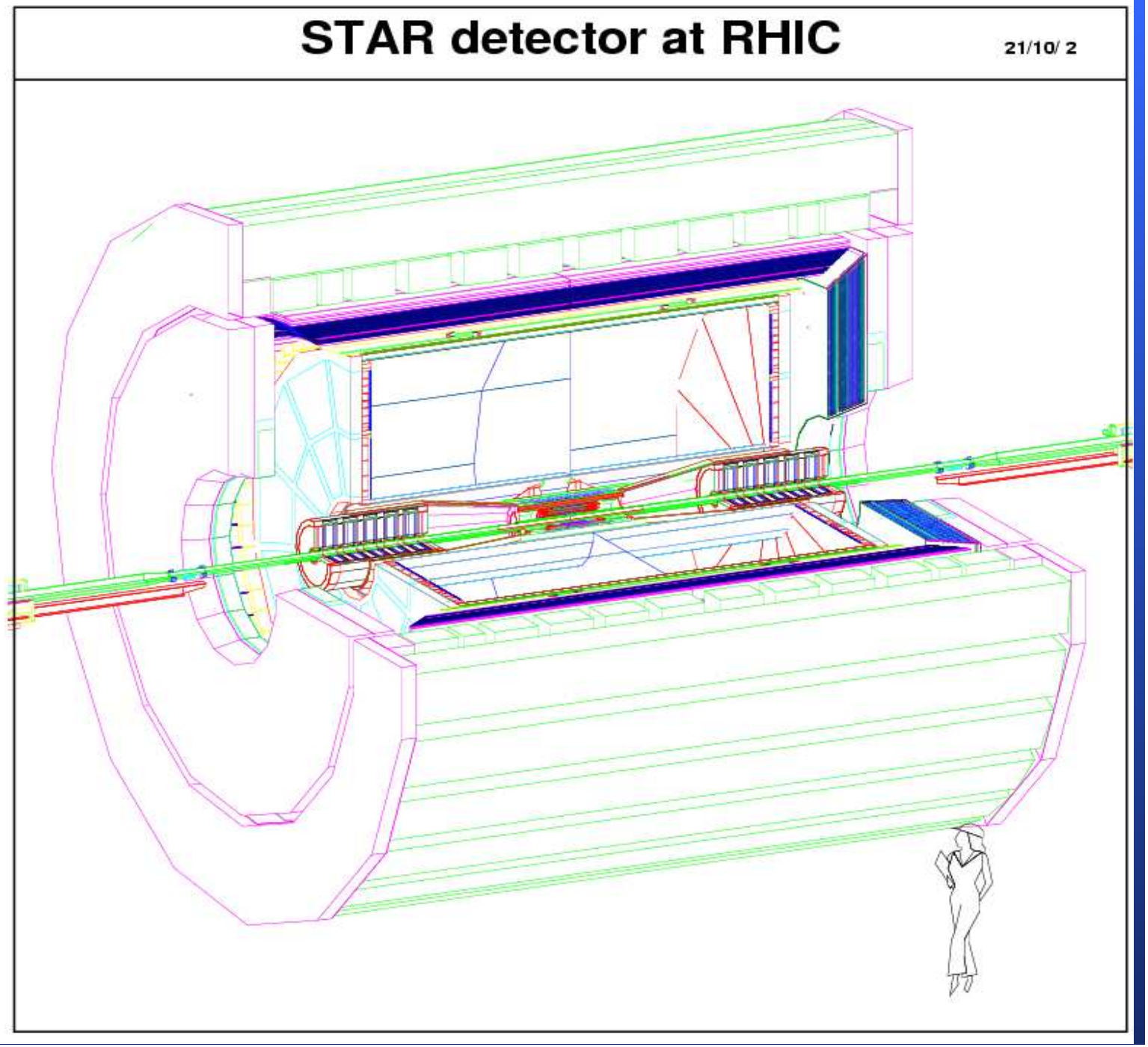
Standard setup

New detectors

Next steps

BROOKHAVEN NATIONAL LABORATORY

Standard Setup



Standard Setup

- Silicon tracker 3 layers

  4^{th} layer geometry also available
- Central TPC (+MWC)

  A few corrections during last year

  t' gas density (overall effect - 0.5 Mev for a 2 m track)

  t' membrane material
- Forward TPC
- Central Barrel Trigger

Standard Setup

- Barrel Calorimeter + Shower Max
- End Cap calorimeter

  New realistic design implemented by O.Rogachevski (Dubna) and recently verified by J.Balewski

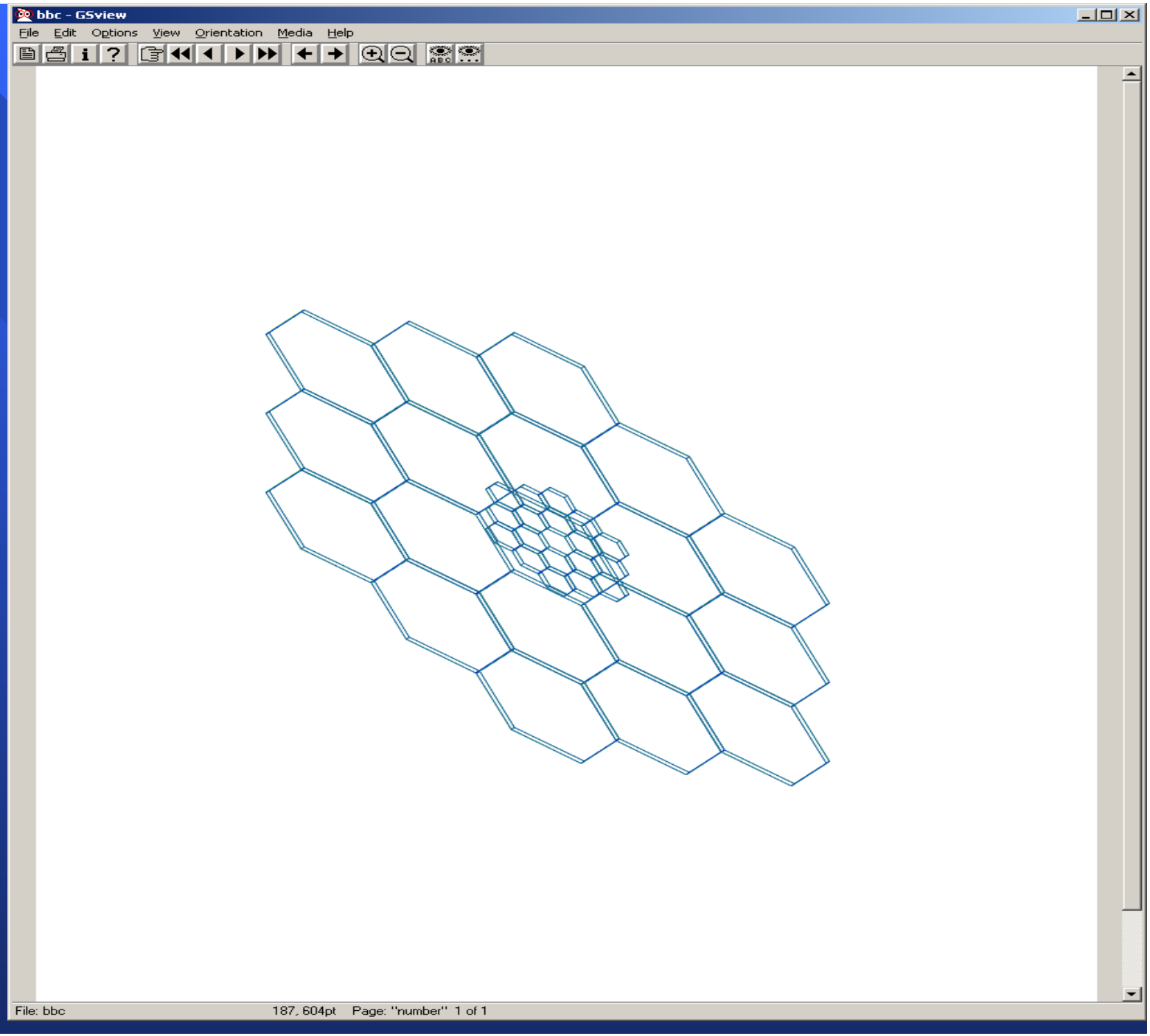
  Few (modular) versions foreseen for the future
- Magnetic Field

  A recent bug fix (thanks to J.Thomas)

  Right size field inside magnet was stretched by 20 cm

  0.5 cm grid now (for fast access)

New Detectors



New Detectors

- Beam-beam counters (Akio,Yiqun,Kopytin)
- Forward Pion Detector (Akio,Yiqun)
- Photon Multiplicity Detector (Chattopadhyay,Subhasis)
- TOF system
- Geometry files are ready, tested in standalone mode
- integration is expected soon (in GSTAR as well as in G2T and ROOT4STAR)

Documentation

- Nice web pages available under STAR->computing->simu->Geant3
- User Manual
- System descriptions
- Examples of kumac files
- Many thanks to Olga Barannikova

Production System

- Set of scripts available for massive production
- Based on a common catalog
- Portable to other clusters
  (LBNL, US ATLAS etc)
- Intensively used recently for trigger studies

BROOKHAVEN NATIONAL LABORATORY

Next Steps

- Some revision of the geometry is needed
  - SVT cables (?)
- Physics:
  - Hadronic physics GHEISHA vs GCALOR
  - . More is expected
- Geometry abstraction for reconstruction
  - Active element alignement
  - Passive material for track fitting
  - XML ? G4 ? More is expected

Conclusions

- New Simulation Leader Maxim Potekhin
- STAR detector simulations are in good shape
- Should be useful for both for Data Analysis and future Detector Upgrades
- Thanks to all who worked on simulations !