

# Forward Detectors Report

A. Sbrizzi

# Integration of ZDC and ALFA in Athena (A. Dell'Acqua)

- World volume increased to include the forward region when:
  - `SimFlags.ForwardDetectors.set_On()`
- ALFA activated in the G<sub>4</sub> simulation (see Tom'stalk):
  - `DetFlags.ALFA_setOn()`
- Eta/Phi filters must be switched off to shoot particles in the forward detectors
  - `SimFlags.EventFilter.set_Off()`
- ZDC not yet there (12/10)

# Integration of Beam Transport Code in Athena (A. Dell'Acqua)

- Currently, only G<sub>4</sub> transport is available
  - Rectilinear propagation (good for neutrals, not for charged particles)
- Scheme proposed by A.Dell'Acqua
  - Use G<sub>4</sub> tracking to the end of the ATLAS cavern
  - FP(N)Track will kick in and transport particles to the front face of the detector where accurate G<sub>4</sub> simulation can be restarted
  - This scheme is “technically” simpler than the original one proposed by ALFA and its implementation will start immediately since it is independent from the detectors being activated in the simulation (12/10)
- Discuss the possibility to use the FLUKA simulation of the ATLAS-TRT region (R. Bruce) as the non-pp collision group (D.Berge, W.Kozanecki)

# Neutron transport (E. Carquin)

- Edson is now taking care of FNTracker
  - Mark Baker is no longer available
  - D.Macina (LHC staff) is providing precious help for accelerator settings
- First version of FNTracker has been obtained adapting FPTracker, which is valid for protons (see Tom's talk), to handle neutral particles
- Simple scheme to simulate particle decays has been added by Edson
  - First trigger efficiencies based on the number of transported particles crossing the ZDC volume (no full simulation yet) are available
- For the future
  - Discuss the possibility to merge the two programs

# ZDC simulation (S. Mohapatra)

- The first svn version created by A.Dell'Acqua will be updated by Soumya with the new features he developed (12/10)
- Added two flags to simulation
  - `G4AtlasApps.SimFlags.ZdcPixelStatus=True/False`
  - `G4AtlasApps.SimFlags.ZdcStripStatus=True/False`
- Final container adapted to be identical to real data
  - Only done for strips, easily ported to pixels
- Number/energy of photons in the strips/pixels are returned
  - Both high and low gain channels are simulated
- CPU Time
  - The simulation of 7 TeV neutrons takes 10 min/event
  - Ready to investigate other solutions if this turns to be an issue