

ATLAS and Geant4

- ATLAS G4 simulation in continuous production mode since
 - Maintenance, bug fix, little development
- Currently using G4 8.3.patch02
 - Since more than a year, without major hassles
 - Bug shaking → technical validation → physics validation. The whole cycle takes quite some time (including recalibration and retuning)
 - Currently undergoing major evaluation effort to understand which physics list has to be used for production and shower parameterization/frozen shower approach
 - ATLAS SW rel. 14, foreseen March 4th, is supposed to be used for data taking. Most likely 8.3 will be used for the first data

Production mode vs. development

- Current production runs require little (if any) maintenance
 - Quite stable and smooth running, no crash reports (?), very reliable simulation suite
- On the other hand, a major rehauling has to be foreseen for the future
 - Simulation infrastructure to be extensively revisited in order to ensure maintainability and scalability.
 - New G4 features require utilization of more recent G4 versions
 - Parallel geometries and tracking
 - BREPs
- Plan to branch out asap after Rel. 14 and introduce G4 9.1.patch01 in the development thread

For data taking

- For the initial data taking phase ATLAS will be based on G4 8.3. We expect this to be quite stable and do not request it to be actively supported by the G4 collaboration (i.e. code backporting)
- G4 9.1 (or later) will be used for ATLAS SW rel.15. For that we do need full support by G4 and full traceability (esp. for what concerns physics processes we want to know what is changing where)
- “Tracking in field” is becoming a concern to us and needs to be addressed with some urgency
- Any optimization attempt (did I hear “CPU”?)