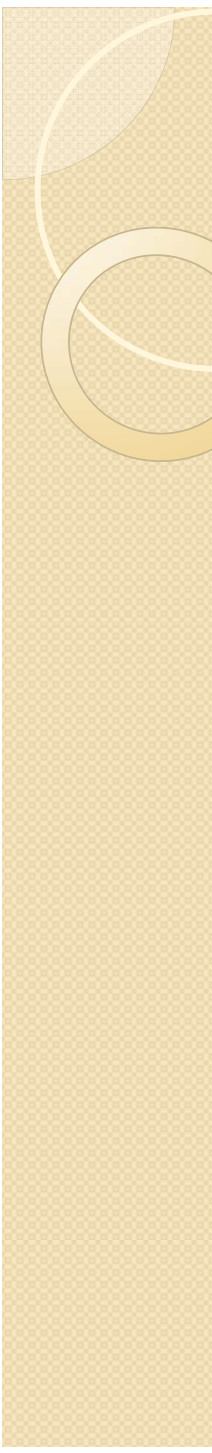
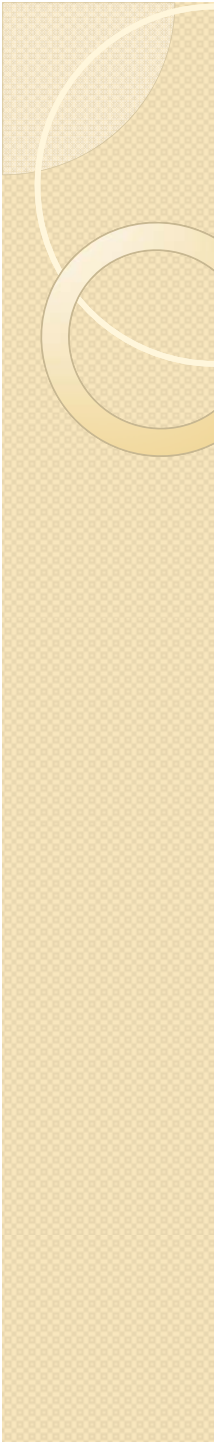




Parallel session IV: Hadronic Code Improvements

- Hadronic working group members undertake homework and report at the session their observations and proposals for improvements
- **G.Folger:** currently inside hadronics Z and A are double that is not natural and it was agreed to make a migration, which will allow to simplify and probably speedup hadronic code:
 - Start in January
 - Strategy “from top classes to bottom”
 - Add new interfaces for this migration, remove old interfaces for the major release
- **T.Koi:** currently base G4HadronicProcess class performs random rotation of all secondary particle directions around projectile direction;
 - hadronic models are not aware about spin of projectile and target; a secondary particle has no polarisation
 - In the case of a serious requirement a design iteration should be done in hadronic framework
 - No actions for the time being

- 
- **D.Wright:** in some part of hadronic code “hand-made” non-standard methods are used, in particular:
 - Sampling of random function
 - Computation of Lorentz boost
 - Usage of units
 - Using internal particle types for a model
 - Unnecessary new/delete of objects
 - These problems make some part of code hardly readable and not potentially effective
 - In 2010 developers will be asked to perform code review and replace problematic piece of code by standard implementations
 - Important requirement to have corresponding tests to reduce risk of extra bugs

- 
- **V.Ivanchenko:** performed review of PostStepDolt method of the base class *G4HadronicProcess*
 - There are 3 approaches for handling **exceptions** (18 exceptions inside this class) but cout not complete and in practice not easy to understand what happens in reality; G4HadronicWriteBoard at each step received several strings that may be an extra overhead
 - **It agreed improve situation before 9.3:**
 - To use G4HadronicException
 - Do not use G4HadReenteringException
 - To examine further G4HadronicWriteBoard and be sure if it is really needed
 - Improve cout in the case of exception
 - **Move check on environment variable from run time methods to initialisation**
 - There are 2 places in PostStepDolt, which should be fixed for 9.3
 - **Strong request to do similar cleanup for all developers**
 - **In 2010 extra cleanup may be introduced:**
 - **Initialise()** method can be included into G4HadronicInteraction and derived model classes to make code more transparent
 - **Isotope production** mechanism can be moved to LHEP models from the base class
 - Existing **cross section biasing** mechanism can be reviewed