

Physics Lists In Extended Examples

I. Hrivnacova, IPN Orsay (CNRS/IN2P3)

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Basic Examples

- B1: QBBC
- B2: FTFP_BERT + step limiter
- B3: Modular PL build from Geant4 physics constructors
- (builders):
 - G4DecayPhysics - defines all particles and their decay processes
 - G4RadioactiveDecayPhysics - defines radioactiveDecay for GenericIon
 - G4EmStandardPhysics - defines all EM standard processes
- B4: FTFP_BERT
- B5: FTFP_BERT + step limiter

“Non-Physics” Extended Examples

- Explicitly defined physics lists in many examples not demonstrating physics, eg. field
- Not helpful for users who want to re-use the example with a Geant4 physics list, as they cannot (should not) modify the Geant4 class
- Need to be changed to use of Geant4 physics lists with, if needed, added the builders for adding some special processes needed for the example
- A help from physics list WG needed to achieve this
- The list of concerned examples is available

“Physics” Extended Examples

- Categories:
 - electromagnetic, optical, hadronic, exoticphysics, medical/dna
- The physics lists defined with several approaches
 - Via [G4PhysListFactory](#), where the name is selected via environment variable or command line argument (Hadr00)
 - Via [G4GenericPhysicsList](#) (Hadr05)
 - As a modular physics list from Geant4 builders or builders provided with the example or both
 - As an empty modular physics list which configuration is selected interactively in a macro (medical/dna)
- Which way should be preferred?

Proposal in Okinawa

- We would like to have more uniform approach how to define a physics list in “physics examples”
- We proposed the approach of a **modular physics list from Geant4 builders** or builders provided with the example or both
- And adding a **dedicated set of examples** (could be in a new “physicslist” category) demonstrating all approaches how to define a physics list with just different main and the same simple application classes shared (geometry, particle gun, scoring, etc)
 - **Hadr05 should be then moved here**
- The conclusion was to postpone this to the next year (this year now), as the improvements in physics lists framework were in plan