A Proposal to Simplify High Energy Hadronic Models

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Problem

- QGSP and FTFP (and others) built of several hadronic models
  - QGS or FTF (G4TheoFSGenerator <- G4HadronicInteraction)
  - P (G4PreCompoundModel <- G4HadronicInteraction)
- 15-20 lines of (almost identical) code repeated throughout physics lists builders
  - 4 times for QGSP
  - 6 times for FTFP
  - 5 times for FTFBinary
  - 5 times for QGSBinary
- Makes physics lists complex and automatic documentation more difficult

Solution

- Make QGSP, FTFP, etc. models in their own right
  - derive from G4TheoFSGenerator
  - put model documentation at this level
  - put them in hadronic/models/ with all other models
  - can resolve the current name confusion by calling them QGSPModel, etc., to distinguish from QGSP physics list

- Physics list builders become shorter, easier to read
- Easier for users to switch QGSP and FTFP in their own physics lists

Solution

- More combinations may have to be added
  - QGSB, for example
  - but better to do so as separate models where they can be individually documented