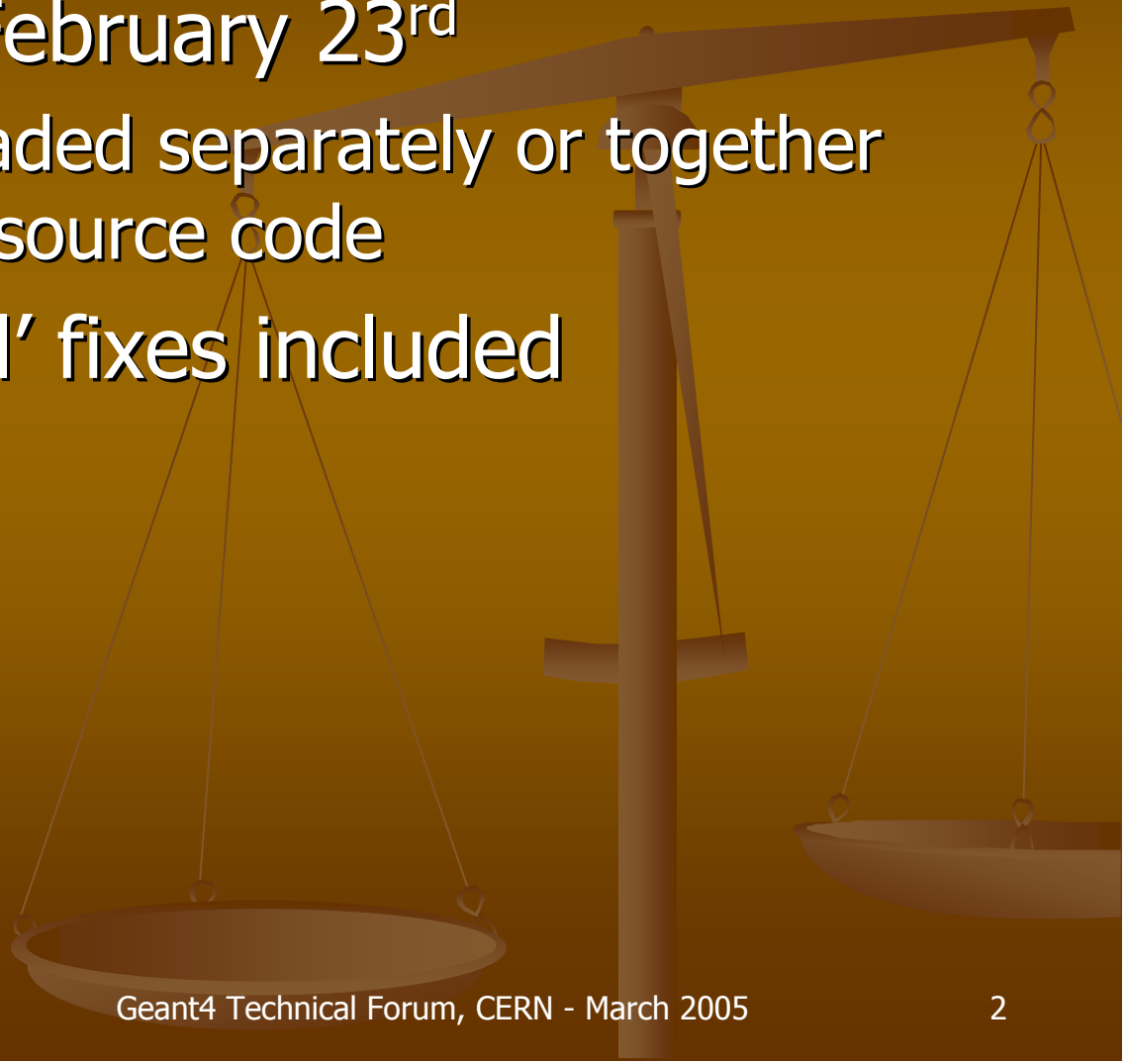
Patch-01 to Geant4 7.0

Gabriele Cosmo – CERN/PH-SFT

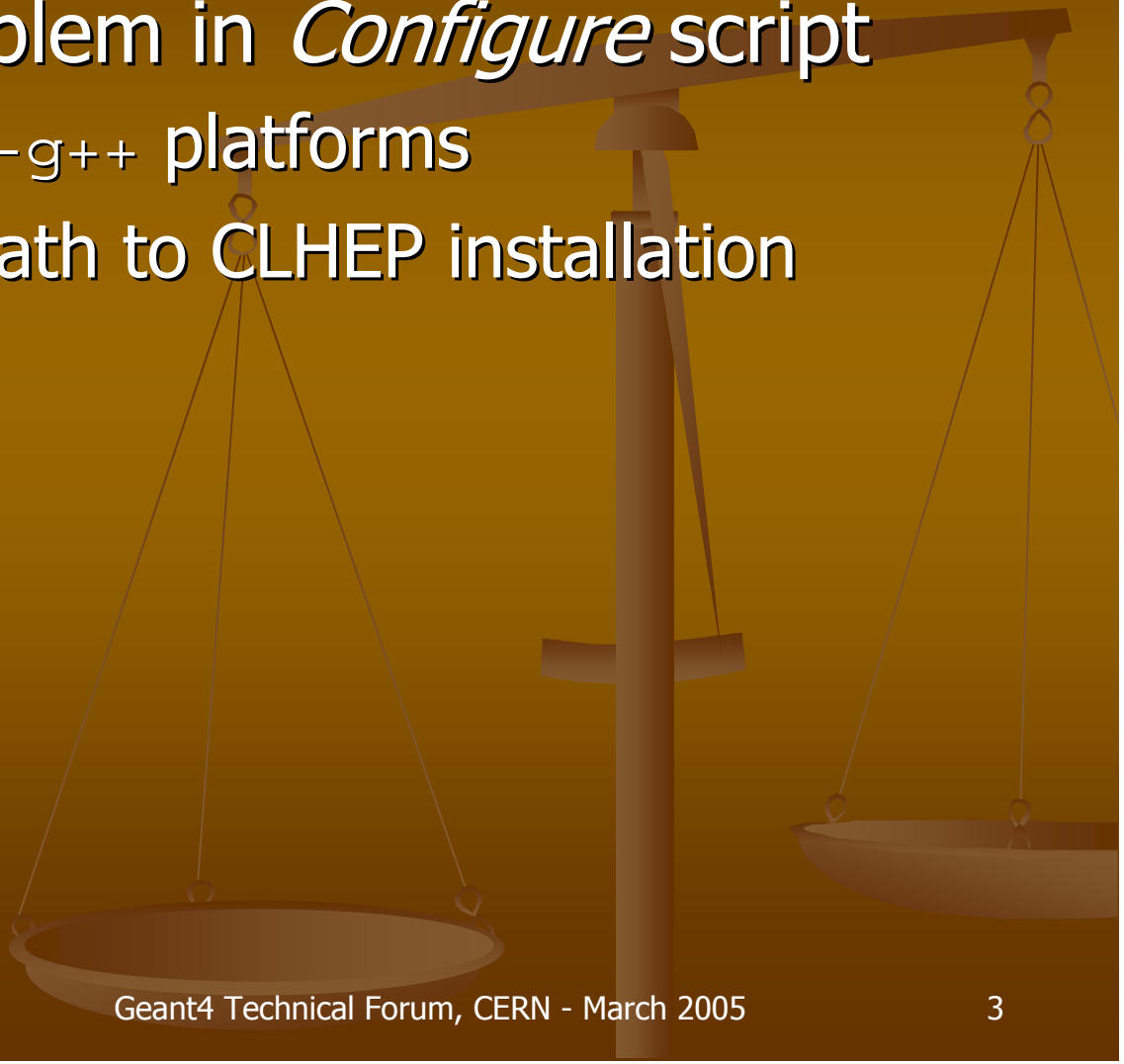
Patch 01

- Distributed on February 23rd
  - Can be downloaded separately or together with whole 7.0 source code
- Few 'non-critical' fixes included



Configuration management

- Fixed setup problem in *Configure* script
  - Affecting `Linux-g++` platforms
  - Fixing system path to CLHEP installation



Geometry

- Improvement in the new specific twisted trapezoid shape
  - Adoption of new algorithm for solving polynoms and determining intersections on twisted surfaces
  - Based on Jenkins-Traub algorithm

Event

- Fixes in `G4SPSRandomGenerator`, `G4SPSEneDistribution` and `G4GeneralParticleSource`

Standard EM physics

- Fixed initialisation problem for ion beam (problem identified in CMS) and fix to avoid crash in the inactivation of e- ionisation
- Fix in UniversalFluctuation
  - proper setting of constants for minimum energy-loss
  - improved simulation of energy loss in thin absorbers
- Fix to `G4PAIModel`
  - Problem reported by ALICE
  - Fixes cases of NaN observed when activating PAI

Hadronic physics

- Fixes to CHIPS model
  - Fixed inconsistency between masses of hadrons / nuclear fragments and masses defined in the Geant4 kernel
  - Corrected few cases of secondary particles below mass shell
    - Improvements in `G4QEnvironmemt` in the usage of `FinalStateInteraction`

Particles

- Fix in `G4UnknownParticle`
  - made non-static to avoid unnecessary linking without its definition in the physics list
  - Fixes problem reported by LHCb

Parameterisations/gflash

- Important fix in the treatment of detector sensitivity

Processes management

- Fix in `G4ProcessManager` to correct ordering of registered processes

Hadronic physics-lists

- Fixed compilation problems occurring on gcc-3.4.X compiler series