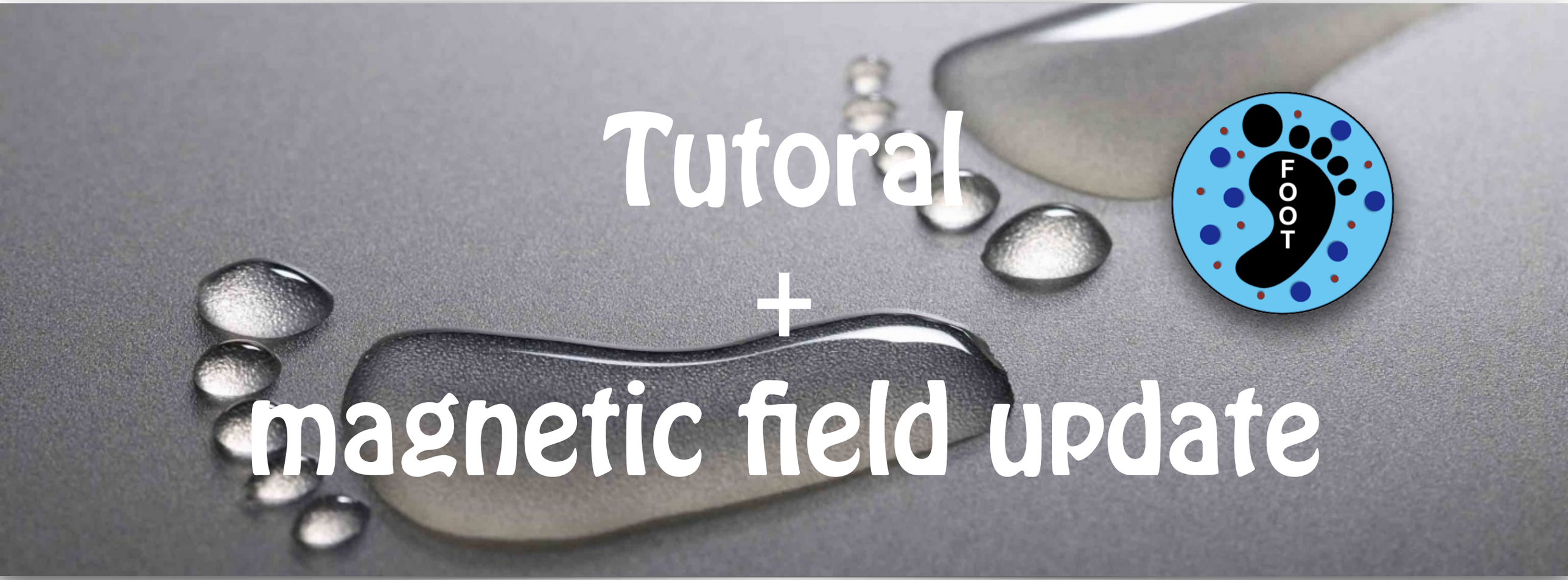
Bologna team

02/27/2018



Matteo Franchini

Tutorial

- Ntuple structure description (Giuseppe)
- Git basic command;
- SHOE general structure and overview
- Use a new variable in the input ntuple + plot + ntuplize it
  - Event struct
  - Hit class
  - Action class
  - Control Plots/Ntuplizer classes
- Modify the detector geometry
  - Structure of the FLUKA file (quick overview)
  - *ParGeo Classes structure
  - Material manager class
- Global Track Fitting class overview

SAVE THE DATE: 7-8 FEBRUARY

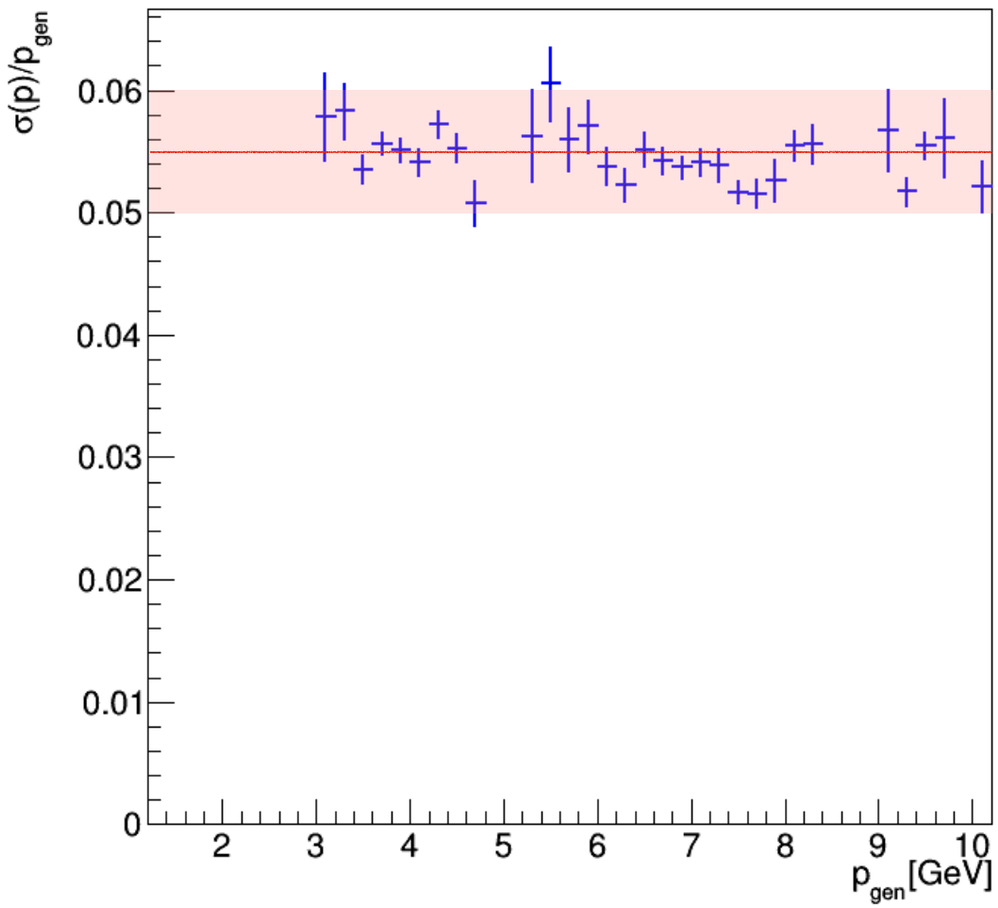
in Bologna

Mail with google form to subscribe **soon**

Magnetic Field studies

v13.1.0

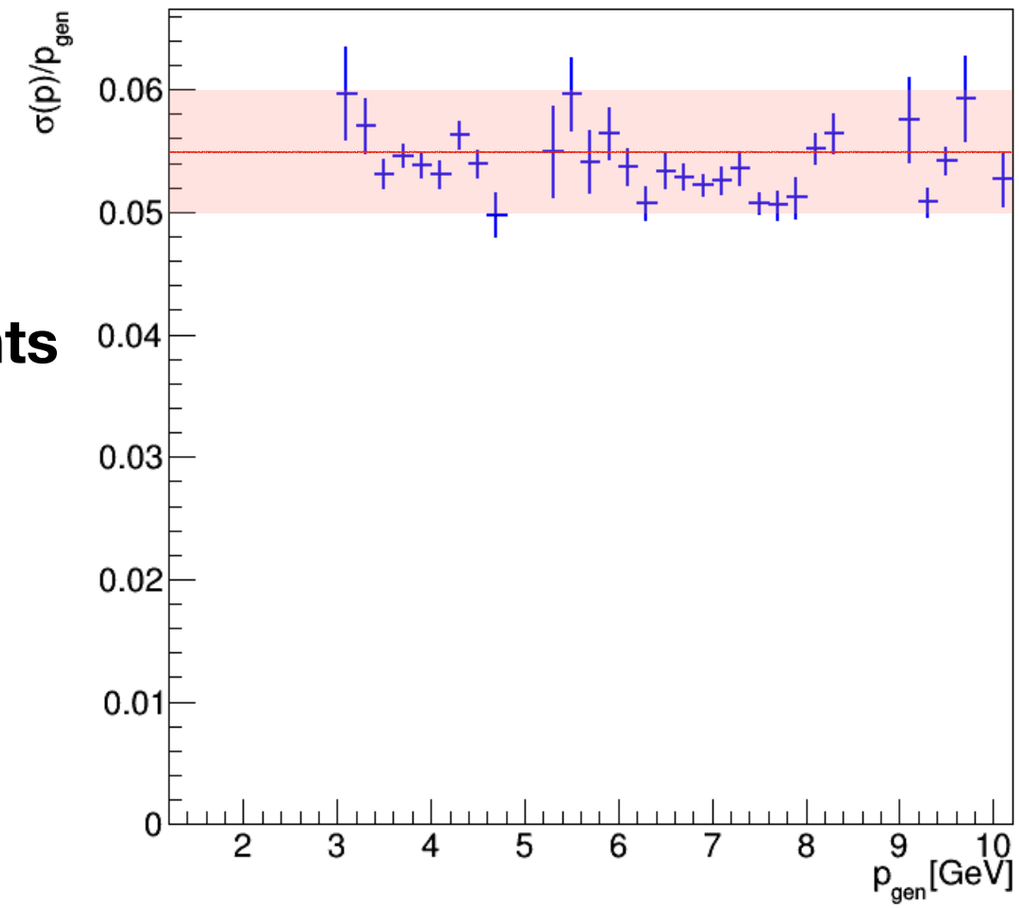
Double gaussian Mag Field
Hand made (no proper simulation)
length z = 10cm



all fragments

v13.1.1

Sanelli Mag Field
Proper simulation program
length z = 7cm, inner radius 3,5cm



- Looking at the points with low uncertainty 13.1.1 improves by ~0.2%

Magnetic Field studies

suggested by Eleuterio

- Have a look at the Magnetic rigidity

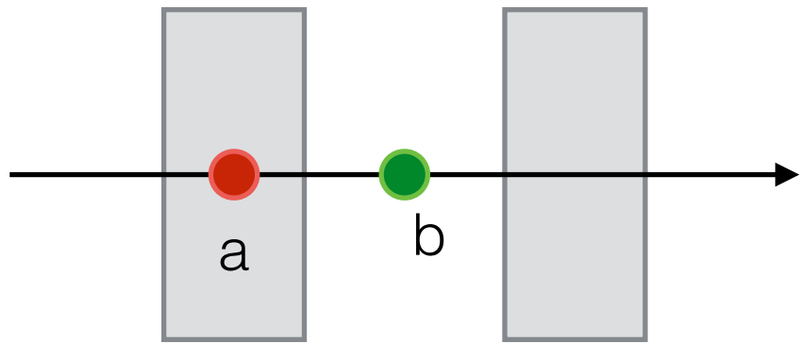
$$rig = \int_l B \cdot dz$$

Total mag field on the FOOT axis (from 0 to 40 cm) =

84.5679 — Double gaussian

85.7861 — Sanelli Mag Field

- Filed value check:



Double gaussian	B(a)=7.71 kG	B(b)=6.166 kG
Sanelli Mag Field	B(a)=8.07 kG	B(b)=5.32 kG

Conlusion

- In the double-Gauss case B is **ONLY** along y, in the Sanelli's configuration it's the real one, not negligible values of **Bx** & **Bz.**

- Double dipole **not related to physical dimension**, i.e. radius.

- Better to have a **realistic magnetic map** for the longer magnets too. Ask to **Sanelli**. Possible to have access to the simulation code?

- **Magnetic rigidity** important for the momentum resolution, have a look during the magnet design. Decide some reference values.

- Important to decide the **magnet design ASAP**.