First look on the impact of Tracker alignment on di-muon resonances reconstruction

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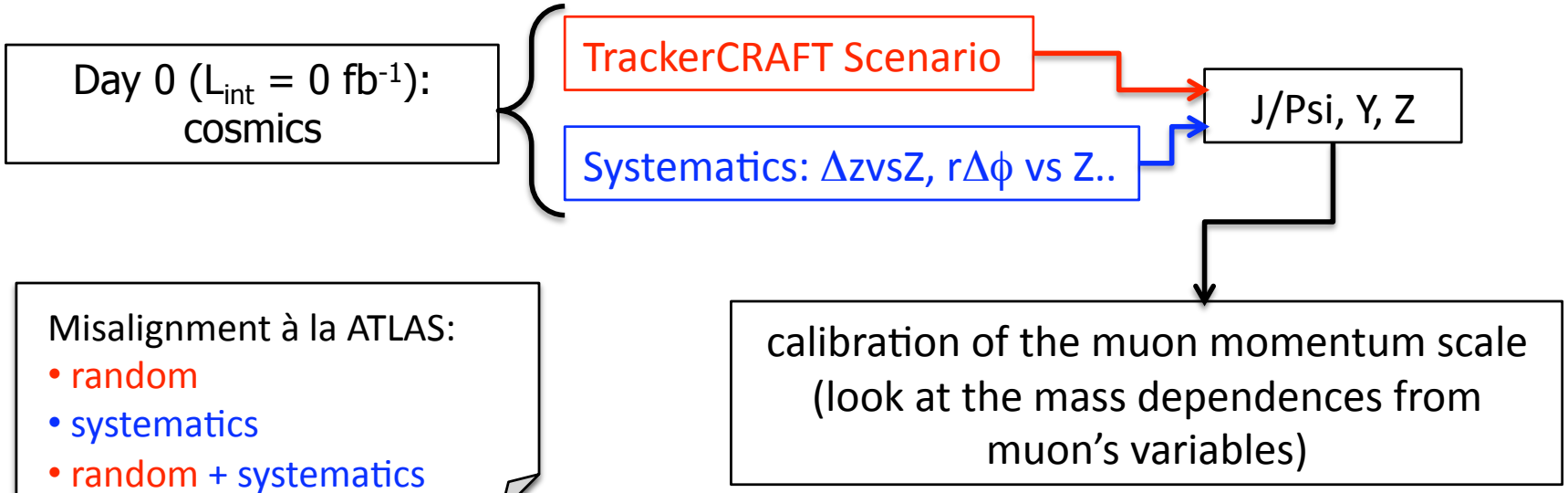
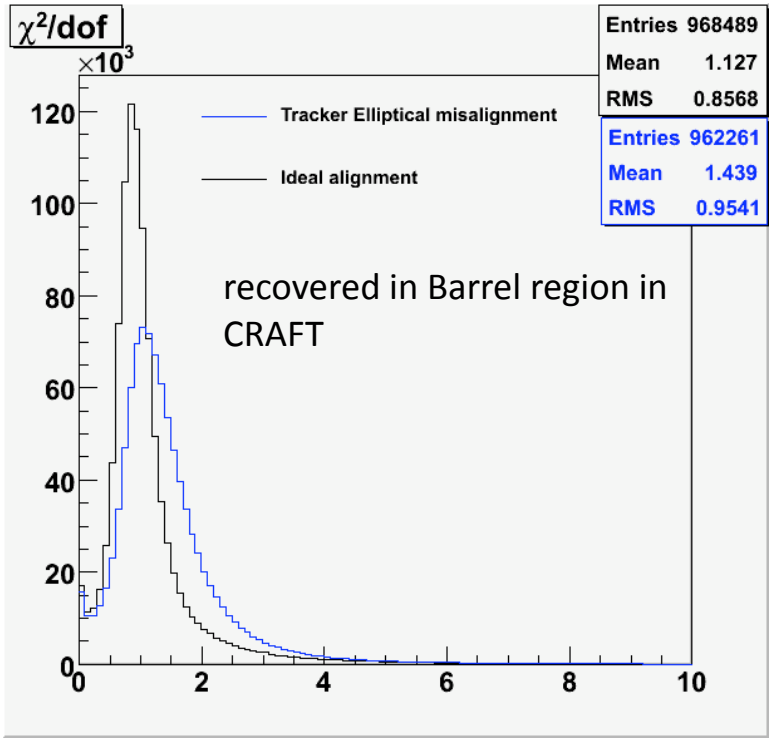
Work plan

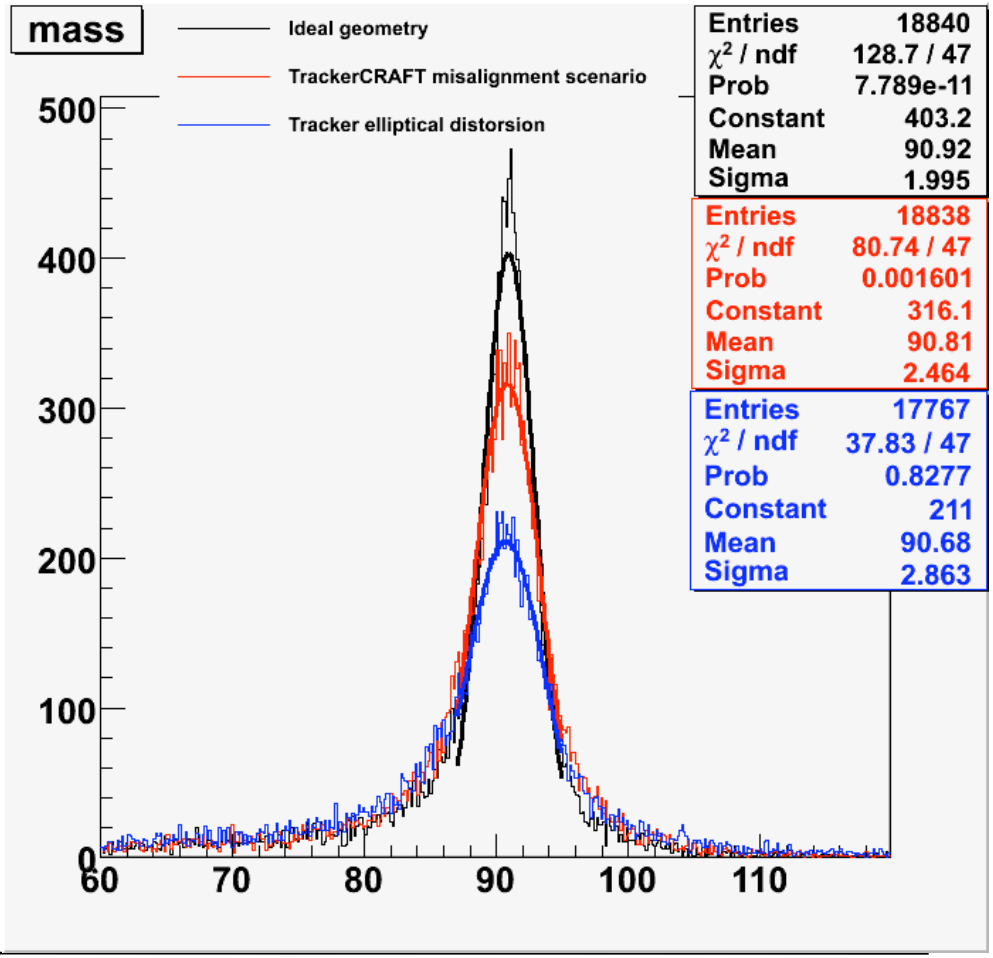
- Evaluate the impact of different misalignment scenarios on physics
- Mainly focused on muons from resonances (J/Psi, Y, Z)
- Remaining misalignment (systematics?) could affect the muon reconstruction: deliver a correction function $F(\phi,\eta,p_t,..)$ for calibration of muon momentum scale (collaboration with muon POG)
- Idea:



Impact on the Z mass (I)

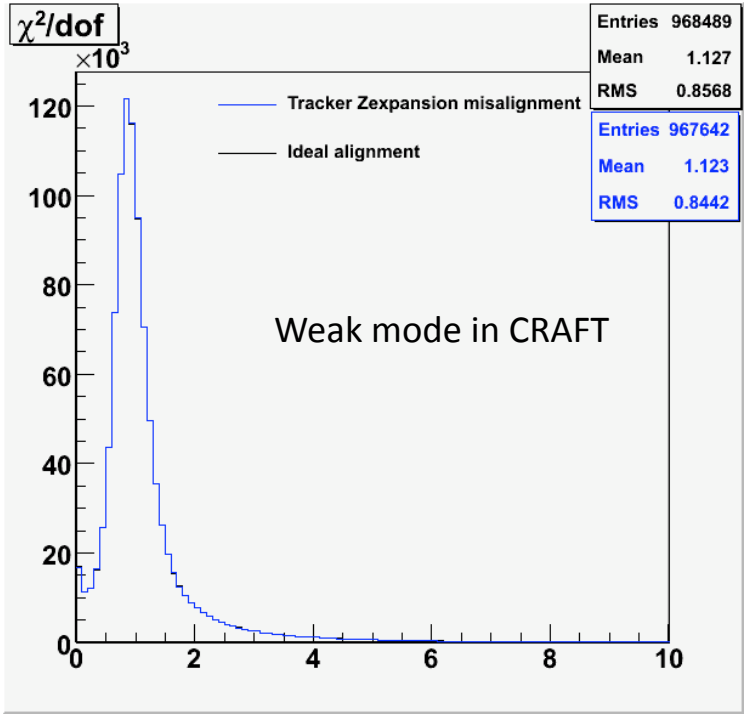
- 20k Z->mumu (/Zmumu/Summer08_IDEAL_V11_redigi_v2/GEN-SIM-RECO) reconstructed with ideal conditions| No Bgd generated | Tracker tracks used |
- Misalignment:
  - ✓ TrackerCRAFT scenario + APE
  - ✓ Elliptical distorsion Δr vs ϕ ()

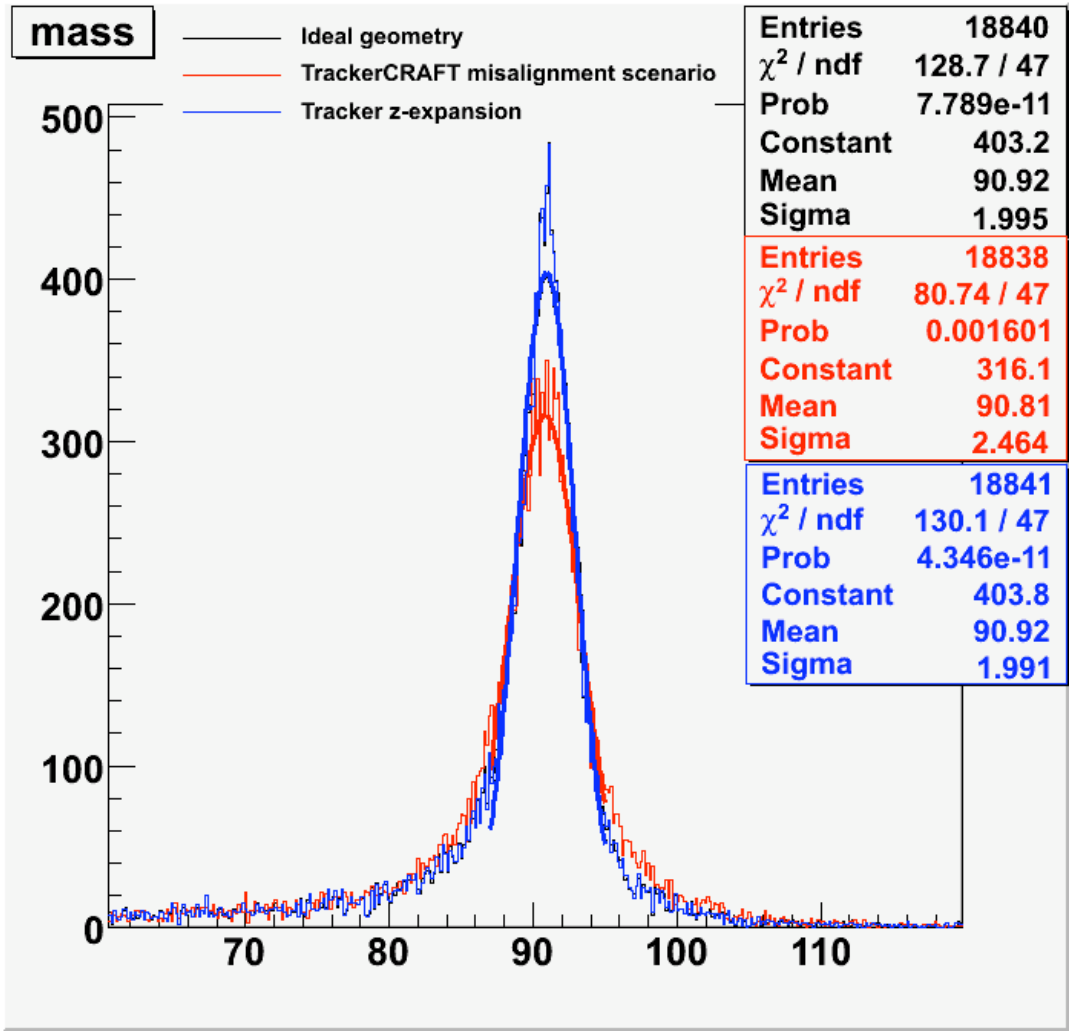




Impact on Z mass (II)

- Applied misalignment:
  - ✓ TrackerCRAFT scenario + APE
  - ✓ Zexpansion: Δz vs z (600 μm)





Next steps

- Look at the impact on other di-muon resonances like J/Psi, Y.
- GlobalMuon vs TrackerMuon
- Add a (systematic) misalignment for the muon system, looking at the combined effect with tracker misalignment, tool needed (collaboration with Nhan)
- …