Run3+4 Simulation: Feedback from PWG-GA

Run3/Run4

Neutral meson and direct photon spectra and flow, mesons in jet,

Gamma-hadron, gamma-jet corrections

- How is the current MC/data ratio motivated ? How would it evolve in Run3/4 ?
  - Efficiency/purity stat. uncertainties should not be dominant
- Which techniques are used: Injected signal, Pt hard bins, Embedding
  - So far use injected signal and pT hard bins
    - Problem with weight assignment to clusters overlapped with ones from background event: may be huge in case of flat signal spectrum
  - Intermediate and high p_T: use signal embedding to full event
    - single photon/pi0/eta/omega embedded to background event
      - with new embedding technique one can add only few signal particles without distortion of underlying event
      - RP-dependent efficiency: use underlying event with flow
  - Jet embedding
    - tune underlying event
  - converted photon/pi0/eta embedding
    - Increase conversion probability for selected photons
  - Additional request for the future: Blind MC with "unknown" proportion of direct photons

Can full simulation be replaced by fast simulation ?

- **Do you need full simulation of the background event** ?
  - Yes, response of calorimeters strongly depends on underlying event but might be possible to be reused if we store digit level
  - Yes for V0, but can be re-used
- **Which detectors/secondaries really need to be simulated ?**
  - Material budget of inner detectors
  - central tracking for track matching
- Other ideas:
  - Fast MC with parameterized EMCAL/DCAL/PHOS response ??
    - Parameterization of response to photons: deposited energy, shower shape
    - Parameterization of response to hadrons: deposited energy, shower shape
    - Parameterization of shower overlaps
  - Develop fast MC for conversion simulation in ALICE
    - Allow scaling material budget just for conversions of primary photons