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Differences between Sim09 versions

Below is a list of all Sim09 versions, quickly describing new features and known issues. Fixes to problems of previous versions are not explicitly listed

Sim09h

- Fixed Sim09g problem in EvtGen itself
- Many updates to AmpGen, see https://gitlab.cern.ch/lhcb/Gauss/merge_requests/438
- New model for Lc2pKpi

Known issues

- None

Sim09g

- Only bug-fixes

Known issues

- Pythia8 can generate a10 that EvtGen cannot decay, resulting in infinite loop (does not affect physics)

Sim09f

- First release for 2018
- Fix for angular model for $\$Lbz \rightarrow Lz \lepp \lepm \$$
- Fix for BeautyTomuCharmTo3h to select oscillated particles

Known issues

- Underlying event multiplicity due to handling of wide resonances, see https://indico.cern.ch/event/787606/contributions/3272825/attachments/1830771/2998119/Sim09c_vs_def.pdf.
- 2017+2018: Incorrect ECAL threshold used (same as 2016 data)

Sim09e

- First release for 2017
- Changes to quarkonia from Pythia8, see <https://its.cern.ch/jira/browse/LHCBGAUSS-1167>.

Known issues

- Underlying event multiplicity due to handling of wide resonances, see https://indico.cern.ch/event/787606/contributions/3272825/attachments/1830771/2998119/Sim09c_vs_def.pdf.
- 2017: Incorrect ECAL threshold used (same as 2016 data)

Sim09d

- Updated particle properties (when Pythia called by EvtGen), for decays to partons
- Resonance from Pythia with non-zero width

- Modified model for $B_c \rightarrow D_{st} \mu \mu$

Known issues

- Underlying event multiplicity due to handling of wide resonances, see https://indico.cern.ch/event/787606/contributions/3272825/attachments/1830771/2998119/Sim09c_vs_def.pdf

Sim09c

- Set correctly incorrect ECAL threshold
- New major DecFiles version
- Fixes to EvtDDalitz (for D_p)
- Fixed incorrect handling of $B_s \rightarrow \bar{K}^* \mu \mu$, see <https://its.cern.ch/jira/browse/LHCBGAUSS-1097>

Known issues

- None

Sim09b

- First release for 2016
- Fixed 2nd metal layer handling
- Updated τ handling with Tauola

Known issues

- 2016: L0 ECAL calibration correct (but incorrect in data)

Sim09a

- Generators: * 2015: lower tracking ϵ due to 2nd metal layer problem * EvtGen updated to PDG2014 particle properties
- Geant4 9.6, no significant differences observed
- VELO: error parameterisation and 2nd metal layer parameterisation

Known issues

- 2015: lower tracking efficiency due to 2nd metal layer problem

-- DominikMueller - 2019-06-24

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