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# MVA input variables: Data-MC checks for $B^0 \rightarrow K_S^0 \pi^0$

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*Weekly group meeting*

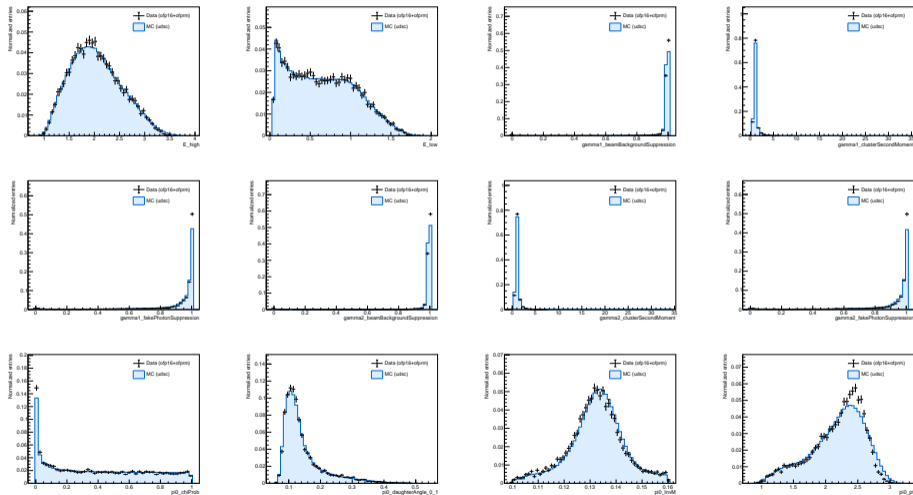
# Outline

- 1 pi0mva input variables (data-mc)
- 2 csmva input variables (data-mc)
- 3 Summary

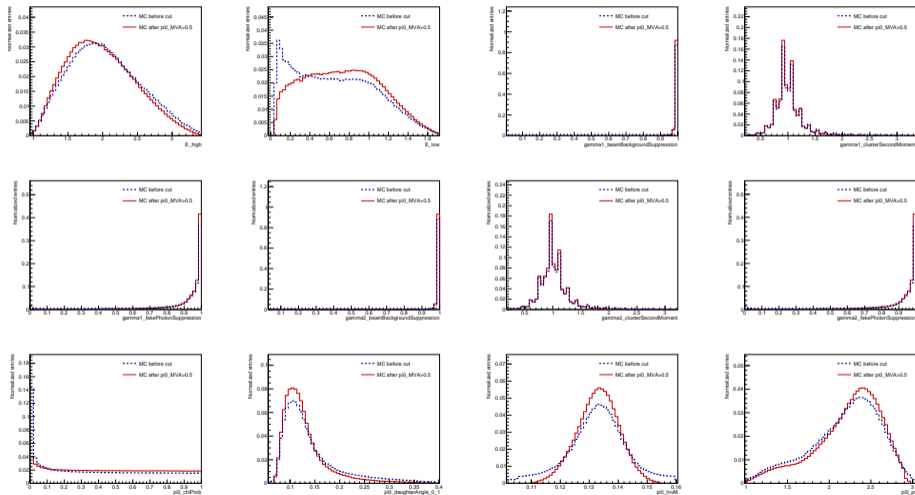
Data and MC are compared under the same analysis-side selection and normalization setup. The 12 pi0mva input variables are:

- pi0\_InvM
- pi0\_daughterAngle\_0\_1
- pi0\_chiProb
- pi0\_pt
- gamma1\_clusterSecondMoment
- gamma1\_beamBackgroundSuppression
- gamma1\_fakePhotonSuppression
- gamma2\_clusterSecondMoment
- gamma2\_beamBackgroundSuppression
- gamma2\_fakePhotonSuppression
- E\_low
- E\_high

# pi0mva input variables



# $\pi^0$ mva selection before/after cut

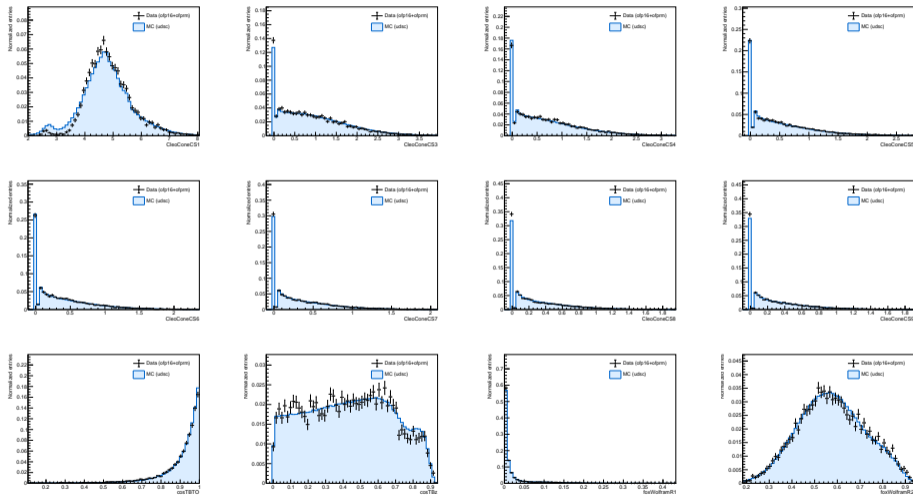


- Data and MC are compared with the same selection/cut point used for this validation pass.
- All csmva input-variable distributions used in training are shown.

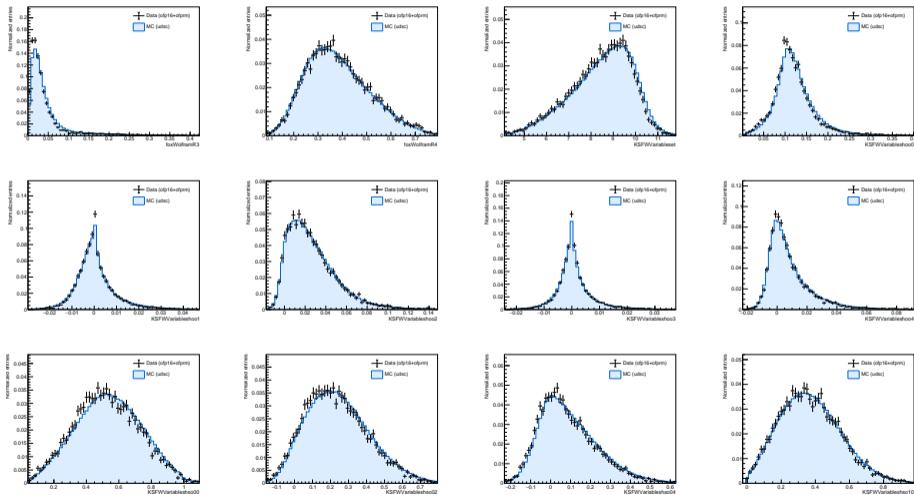
# csmva input variables

- CleoConeCS1
- CleoConeCS3
- CleoConeCS4
- CleoConeCS5
- CleoConeCS6
- CleoConeCS7
- CleoConeCS8
- CleoConeCS9
- cosTBTO
- cosTBz
- foxWolframR1
- foxWolframR2
- foxWolframR3
- foxWolframR4
- KSFWVariableset
- KSFWVariableseshoo0
- KSFWVariableseshoo1
- KSFWVariableseshoo2
- KSFWVariableseshoo3
- KSFWVariableseshoo4
- KSFWVariableseshso00
- KSFWVariableseshso02
- KSFWVariableseshso04
- KSFWVariableseshso10
- KSFWVariableseshso12
- KSFWVariableseshso14
- KSFWVariableseshso20
- KSFWVariableseshso22
- KSFWVariableseshso24
- KSFWVariableseshso24
- KSFWVariableseshso24
- KSFWVariableseshso24
- KSFWVariableseshso24
- KSFWVariableseshso24
- R2
- thrust
- thrustAxisCosTheta
- thrustOm

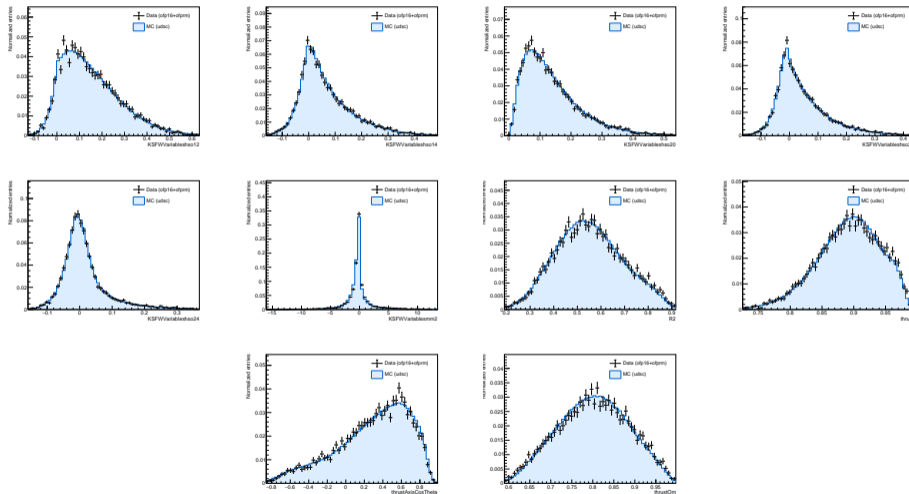
# csmva input variables (1/3)



# csmva input variables (2/3)



# csmva input variables (3/3)



- This update provides a focused Data-MC validation package for MVA input variables.
- Coverage in this report:
  - 12 `pi0mva` input-variable distributions,
  - 34 `csmva` input-variable distributions used in training.
- The slide set is ready for weekly-report discussion and follow-up annotation.

Thanks for listening