

Global PID

MICE CM 44
Analysis Session
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Outline

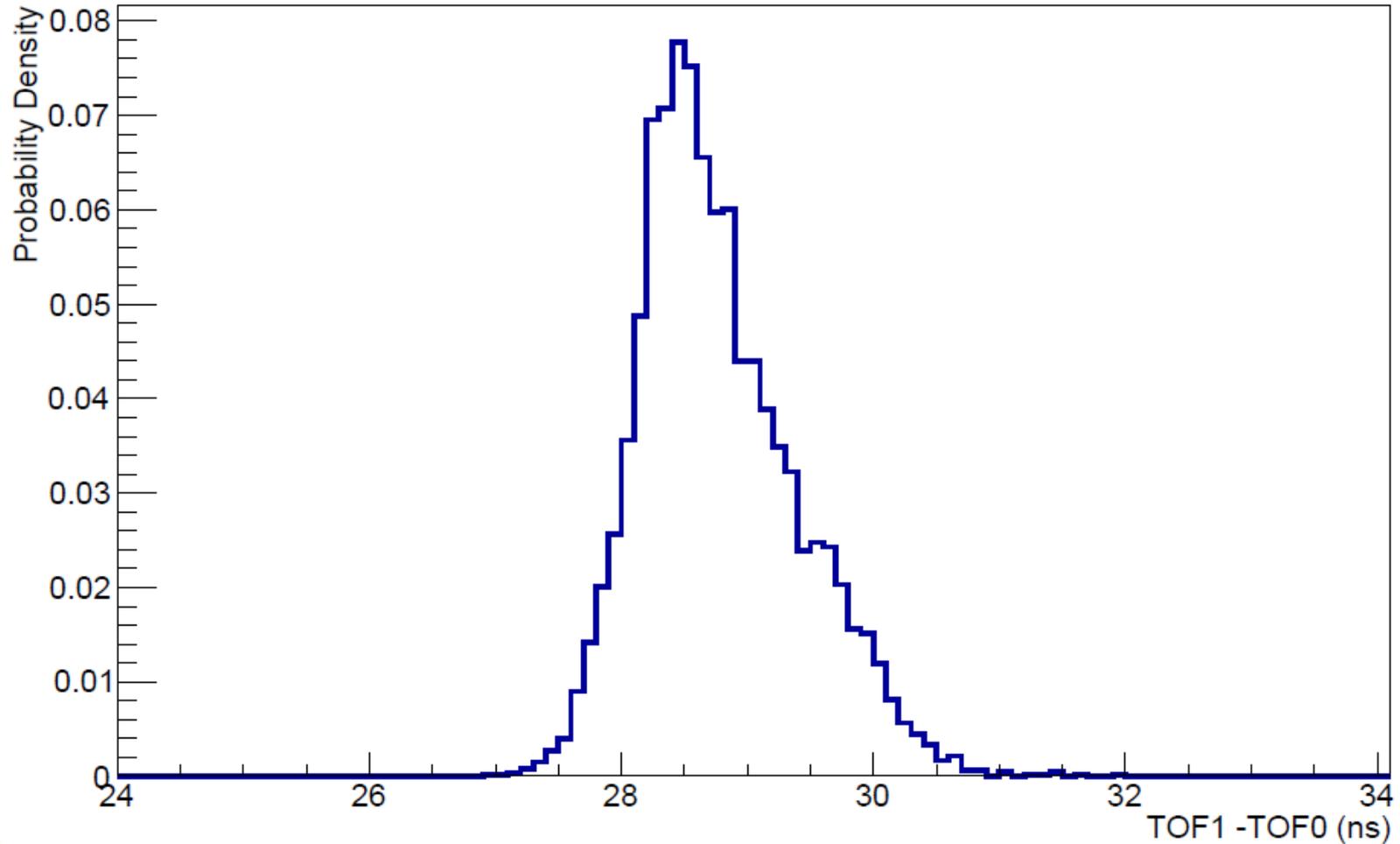
- ▶ MC for PDFs
- ▶ Validation procedure
- ▶ Efficiency/Purity
- ▶ Comparison of variables

MC for PDFs

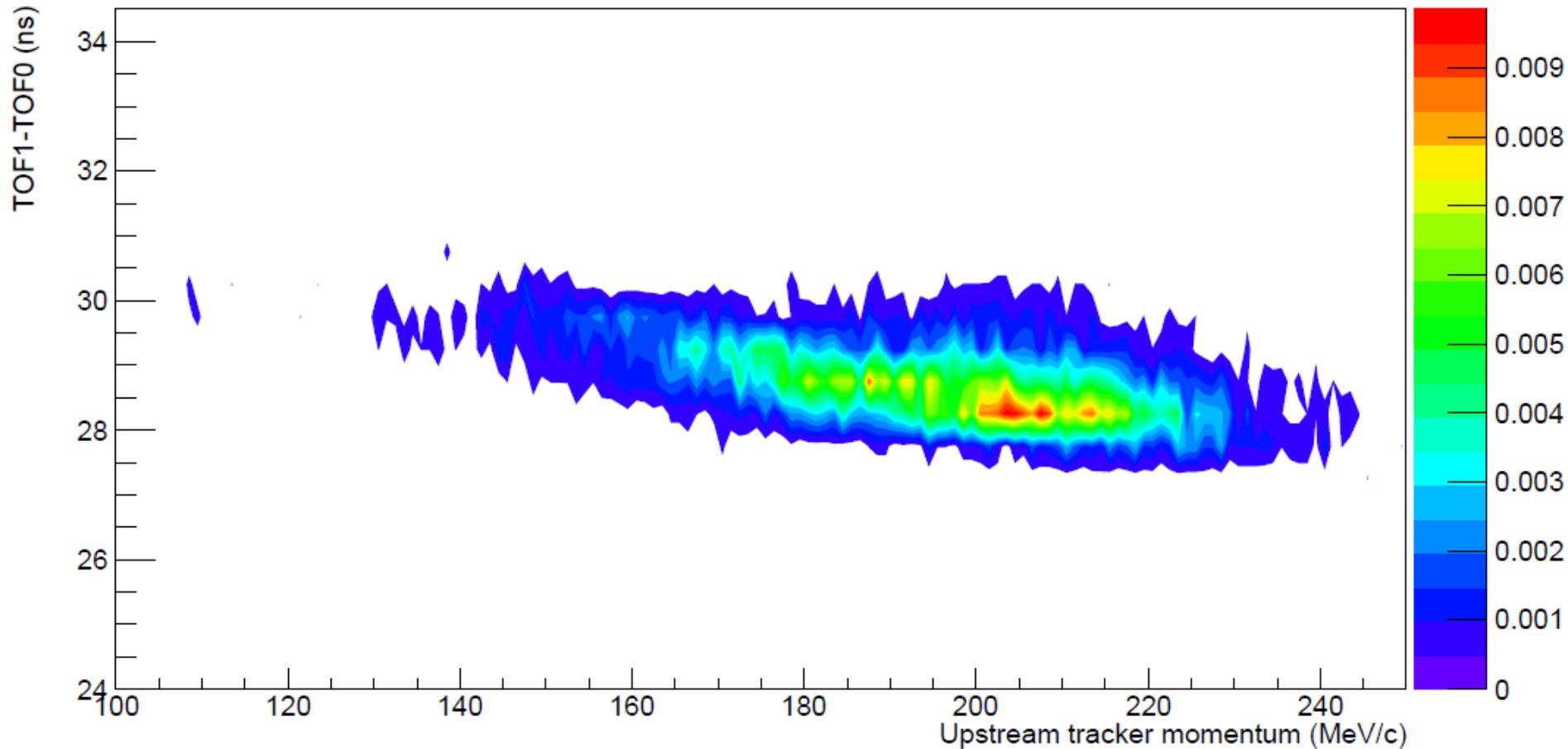
- ▶ Low numbers of e/π in MC beams mean insufficient statistics for PDFs- need to produce more e/π that are representative of those in original MC.
- ▶ Current plan is to use xboa to get beam parameters from particles in MC to use as input to InputPySpillGenerator.
- ▶ However haven't been able to test this properly due to separate issues with MC. This has also prevented production of updated plots for this talk.



Example muon PDFs for old 7469 MC – Time of flight



Example muon PDFs for old 7469 MC – TOF vs Tracker mom

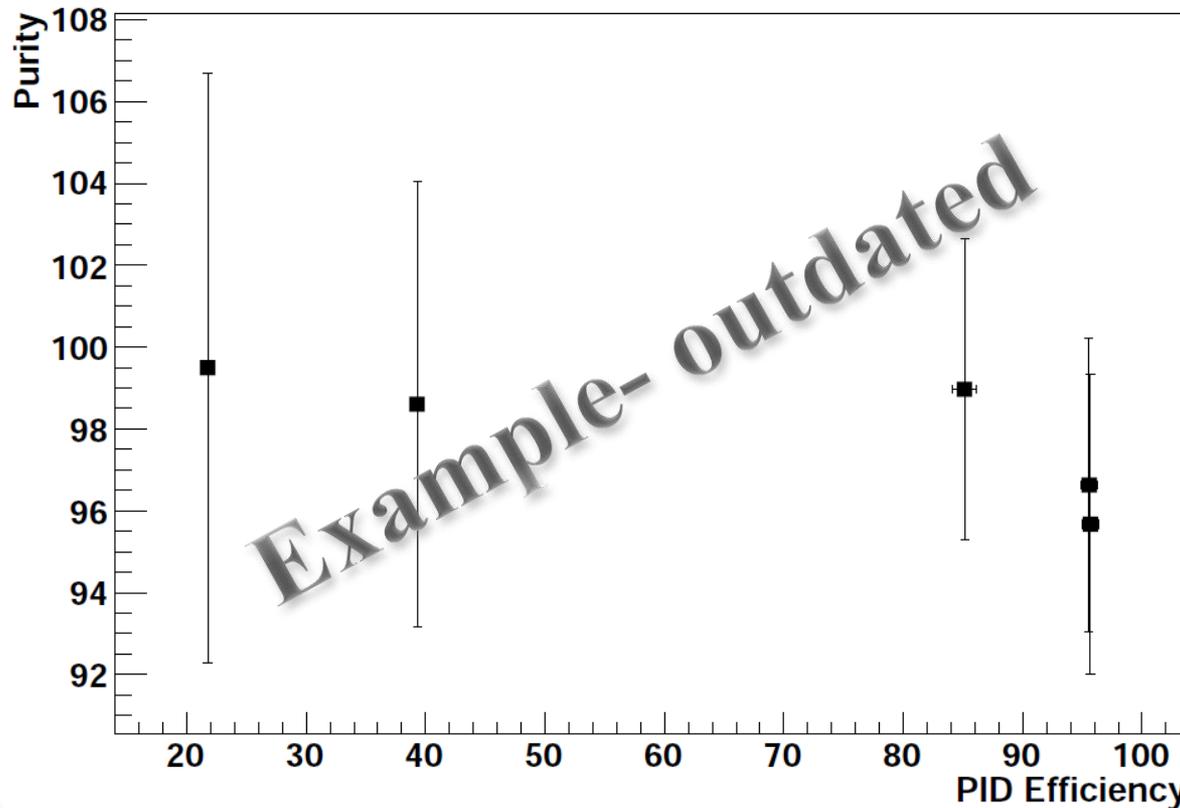


Validation of PID

- ▶ The aim of the validation is to confirm consistency of individual PID variables with MC, consistency between the variables themselves (on MC), and then consistency between the variables on real data.
- ▶ Consistency with MC determined by the purity.
- ▶ Consistency between the variables is determined by how often they agree on a pid hypothesis.

Efficiency/Purity

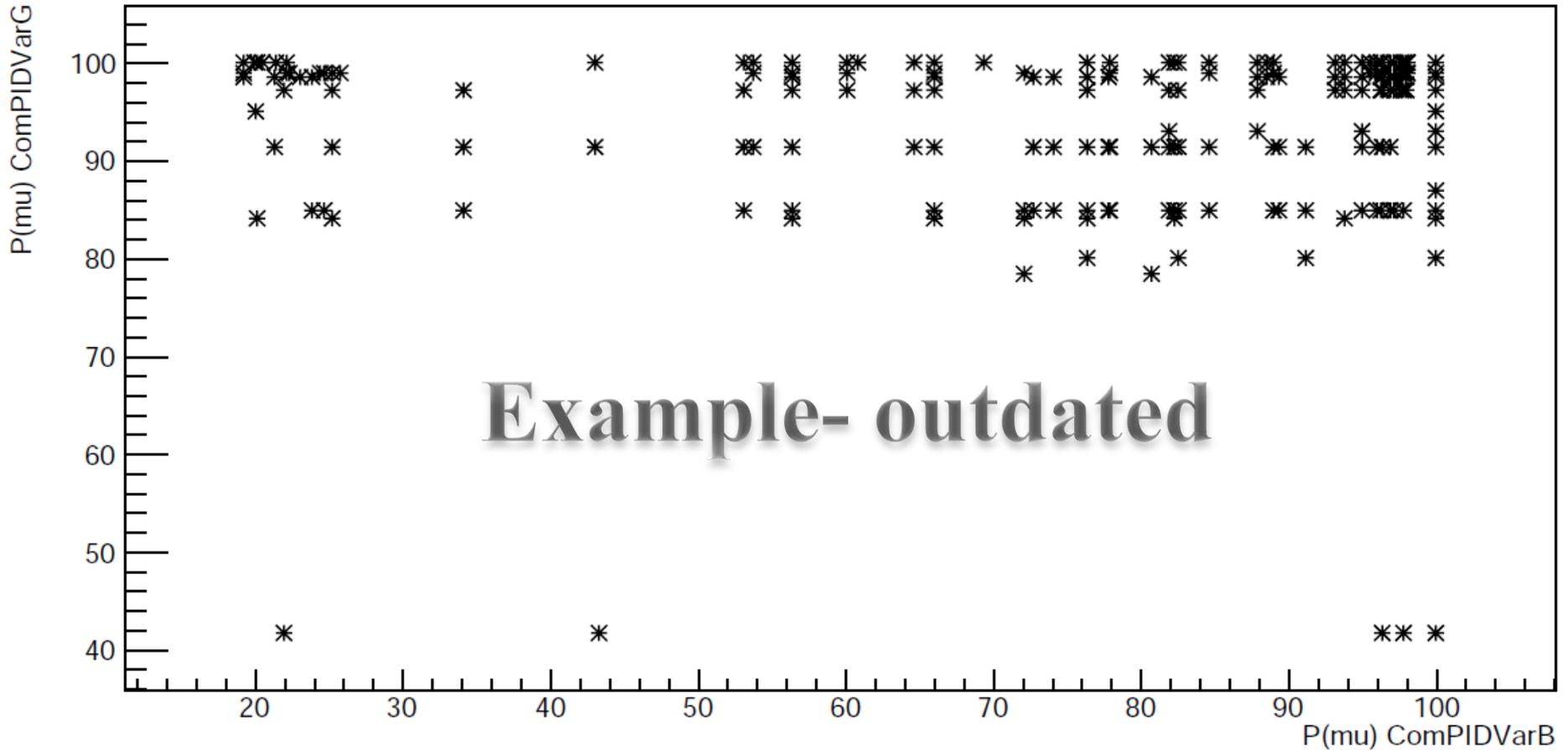
- ▶ Example plot for EMR range and TOF1-2 time of flight variable – updated plot would be better populated.



Consistency between variables

- ▶ Example shown for ComPIDVarB (KL ADC charge product and TOF1-2 time of flight) and ComPIDVarG (EMR density and TOF1-2 time of flight).
- ▶ Points are plotted where a particle has been ID'd
- ▶ Confidence level cut off is 10%
- ▶ A $P(\mu) > 45\%$ will definitely have been identified as a muon. Some particles with $P(\mu) < 45\%$ may still have been identified as muons.

Consistency between variables



Next steps

- ▶ Need to identify issue with MC production.
- ▶ Once MC for PDFs exists, PDFs can be produced within minutes.
- ▶ PID can then be run against these PDFs (again, within minutes)
- ▶ Validation routines can then also be run (first iteration ~2-3 days)