
eA study

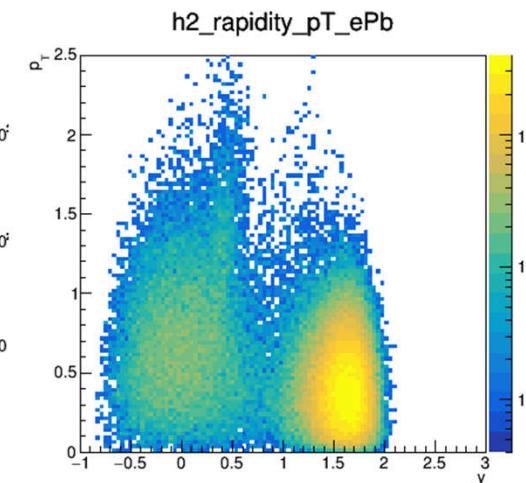
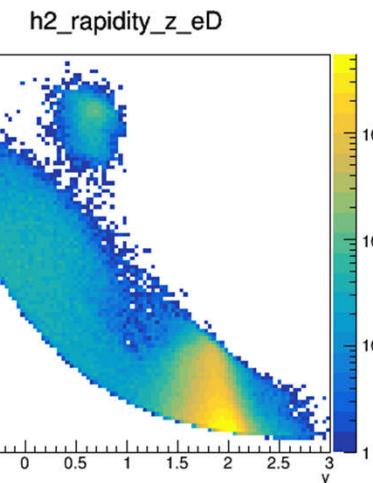
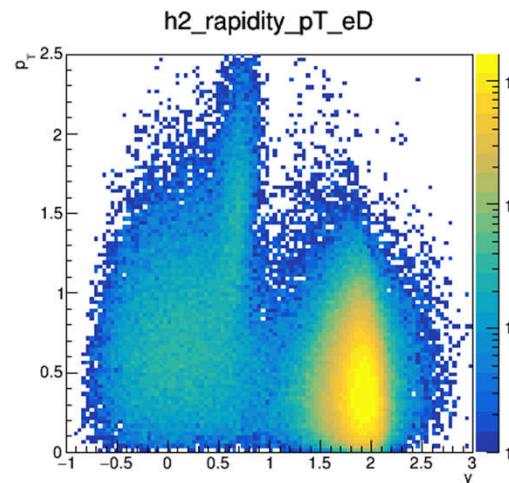
Senjie Zhu 2022.4.11

Mc Sample

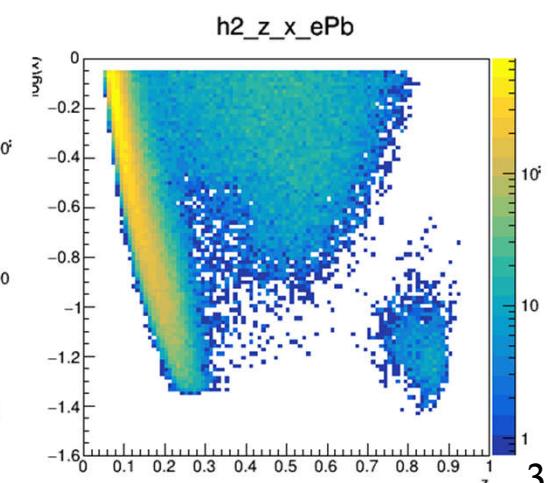
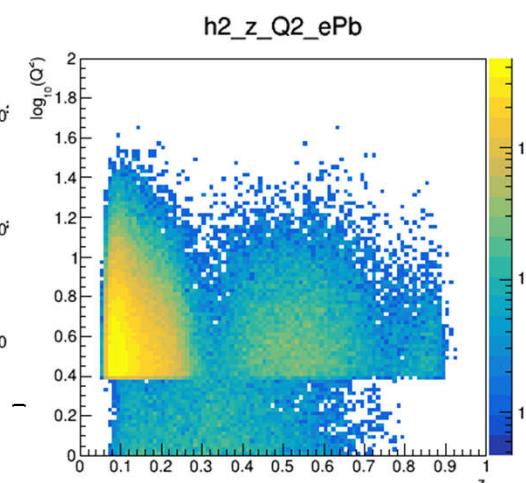
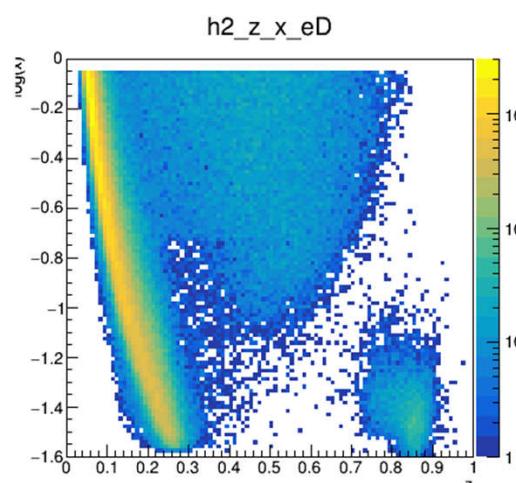
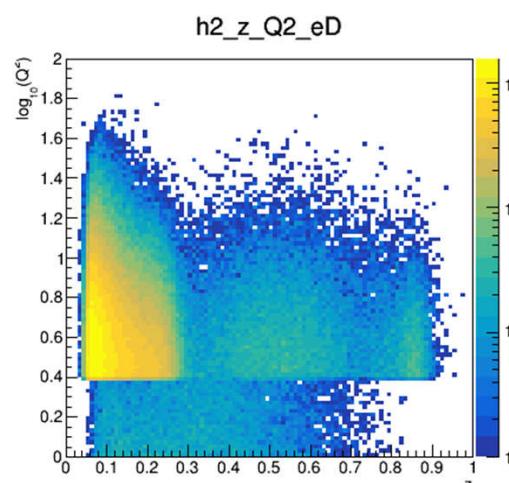
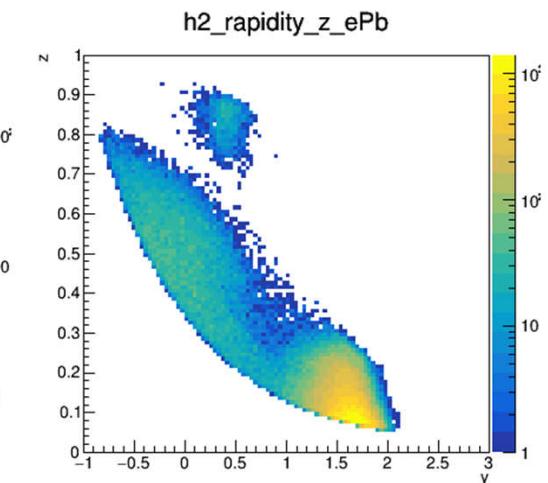
- BeAGLE and input tuned by ECCE
- $10 \text{ GeV}/c$ per charged nucleon in all events
- $Q_{min}^2 = 1 \text{ GeV}^2$, $Q_{max}^2 = 100 \text{ GeV}^2$, $y_{min} = 0.01$, $y_{max} = 0.95$
- $e(3.5 \text{ GeV}/c) + \textcolor{red}{D}(10 \text{ GeV}/c \text{ per nucleon})$: 1×10^9 ,
 $L = 5.4072/2 \text{ fb}^{-1}(\sigma_{e(3.5 \text{ GeV}/c)+p(10 \text{ GeV}/c)} = 0.18494 \text{ pb}^{-1})$
- $e(3.5 \text{ GeV}/c) + \textcolor{red}{Pb}(7.9227 \text{ GeV}/c \text{ per nucleon})$: 357373695 ,
 $L = 2.17266/207 \text{ fb}^{-1}(\sigma_{e(3.5 \text{ GeV}/c)+p(7.9227 \text{ GeV}/c)} = 0.164487 \text{ pb}^{-1})$

Λ_c Monte-Carlo Distribution

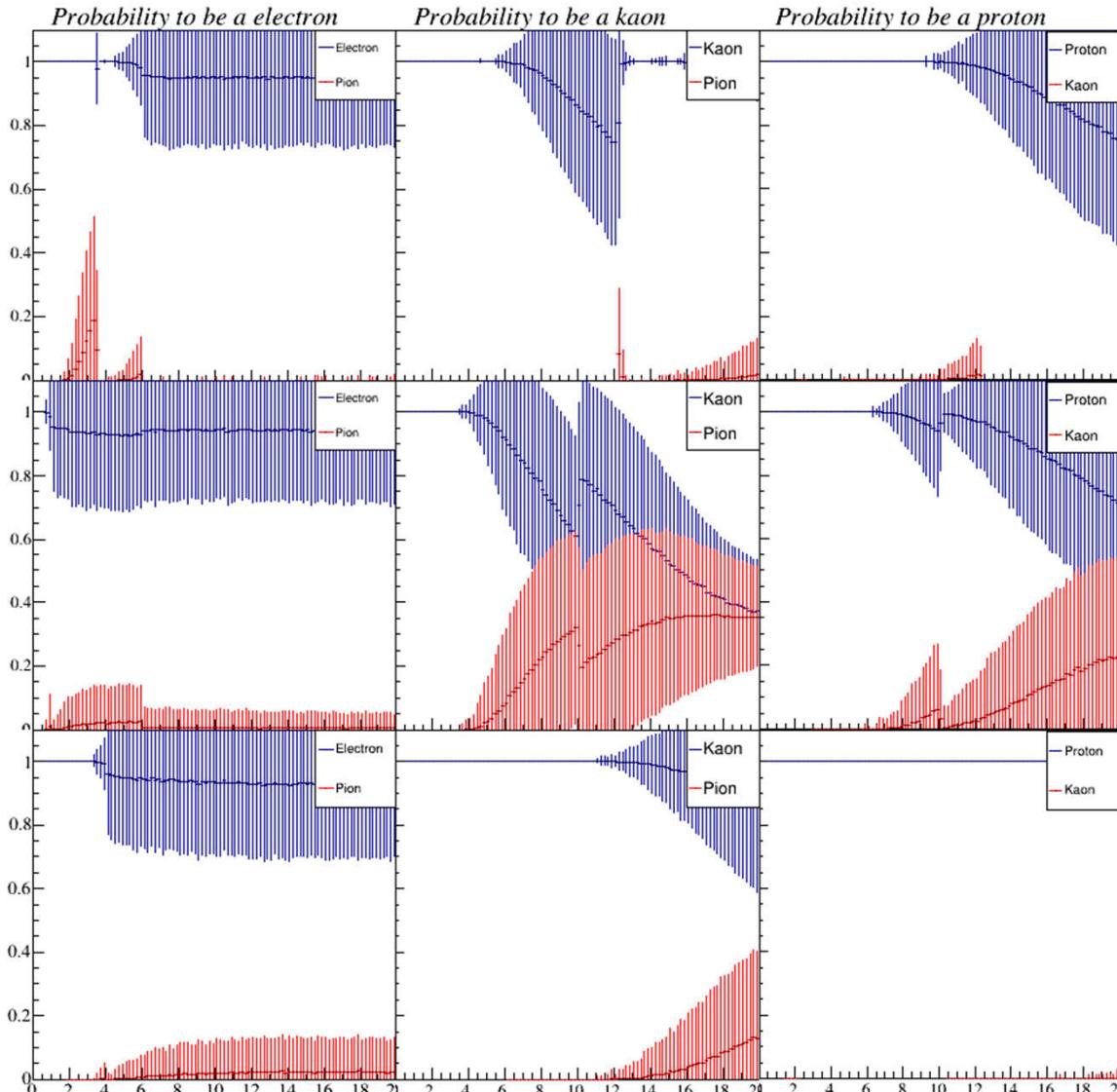
- e-D



- e-Pb



PID Simulation

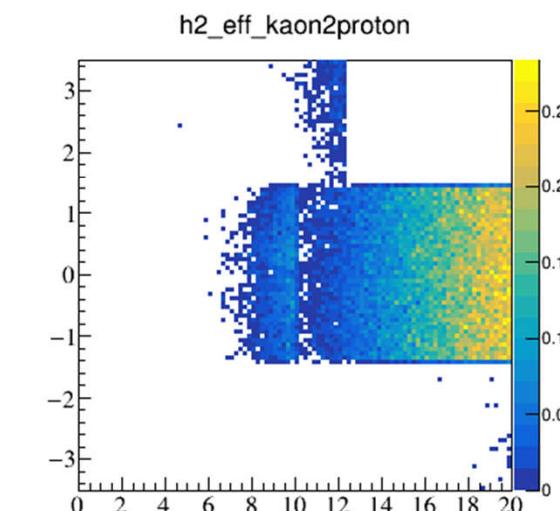
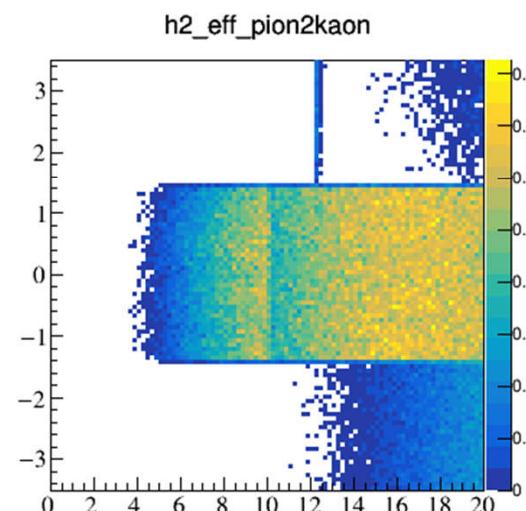
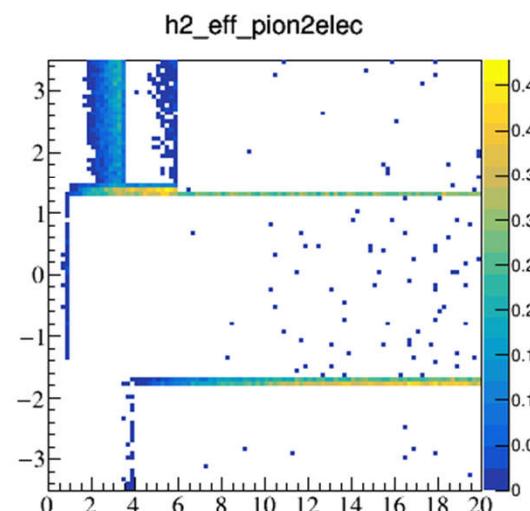
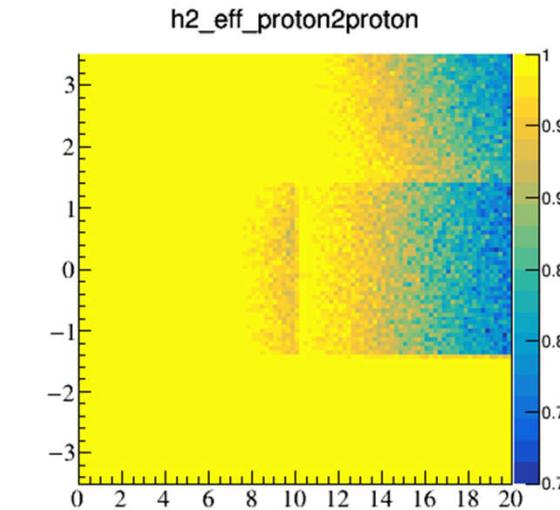
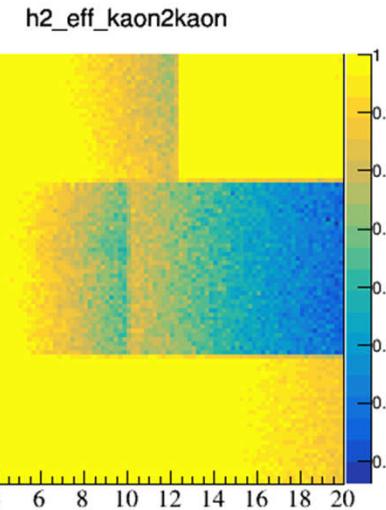
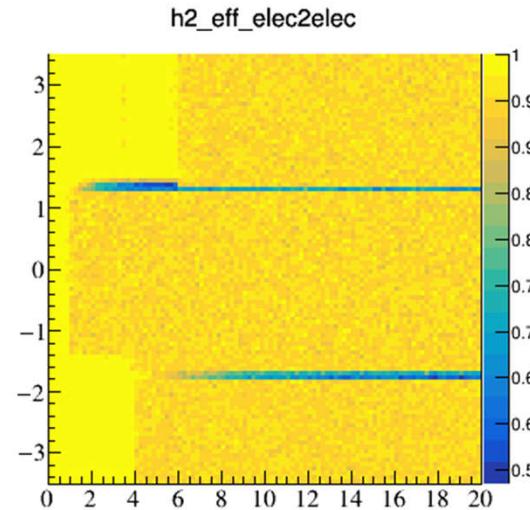


Forward

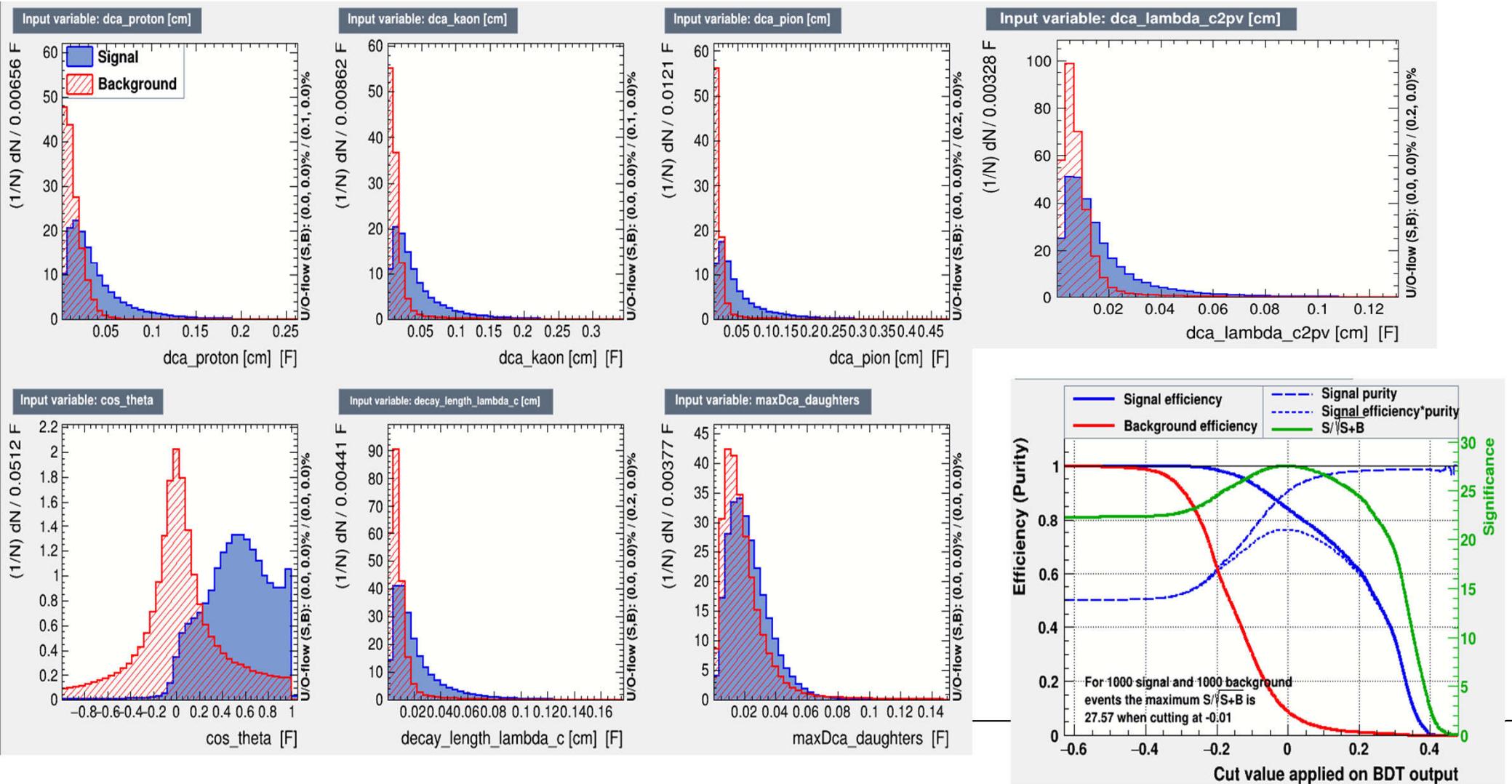
Barrel

Backward

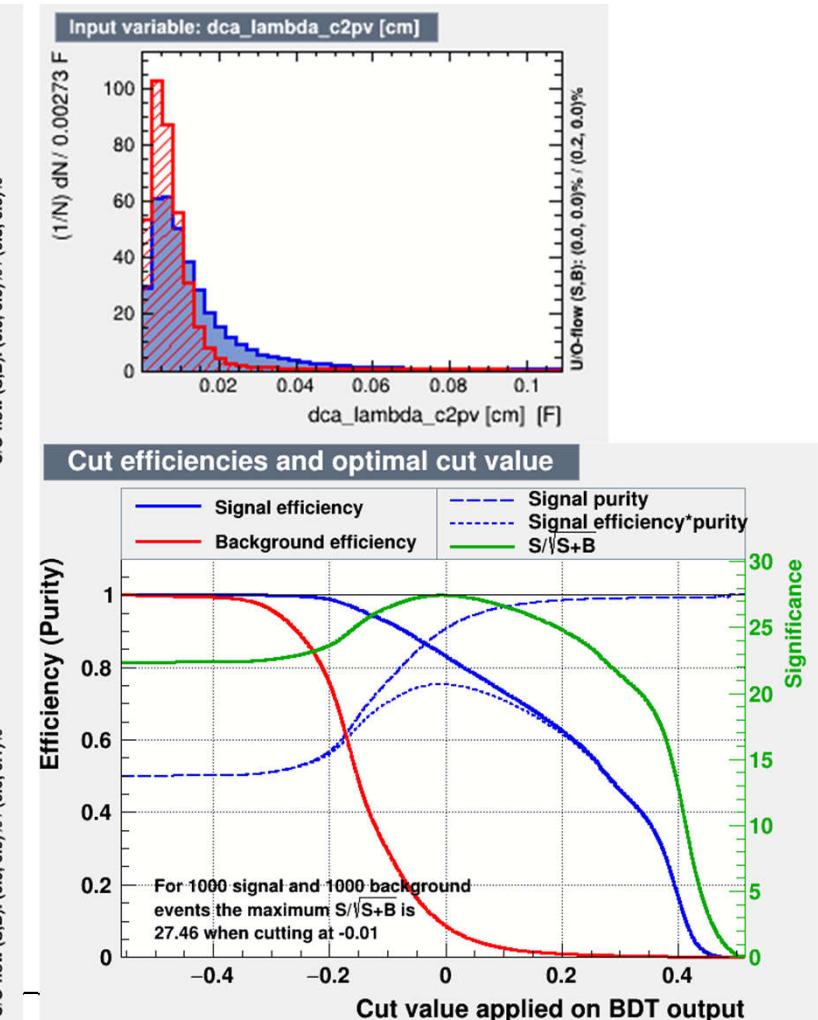
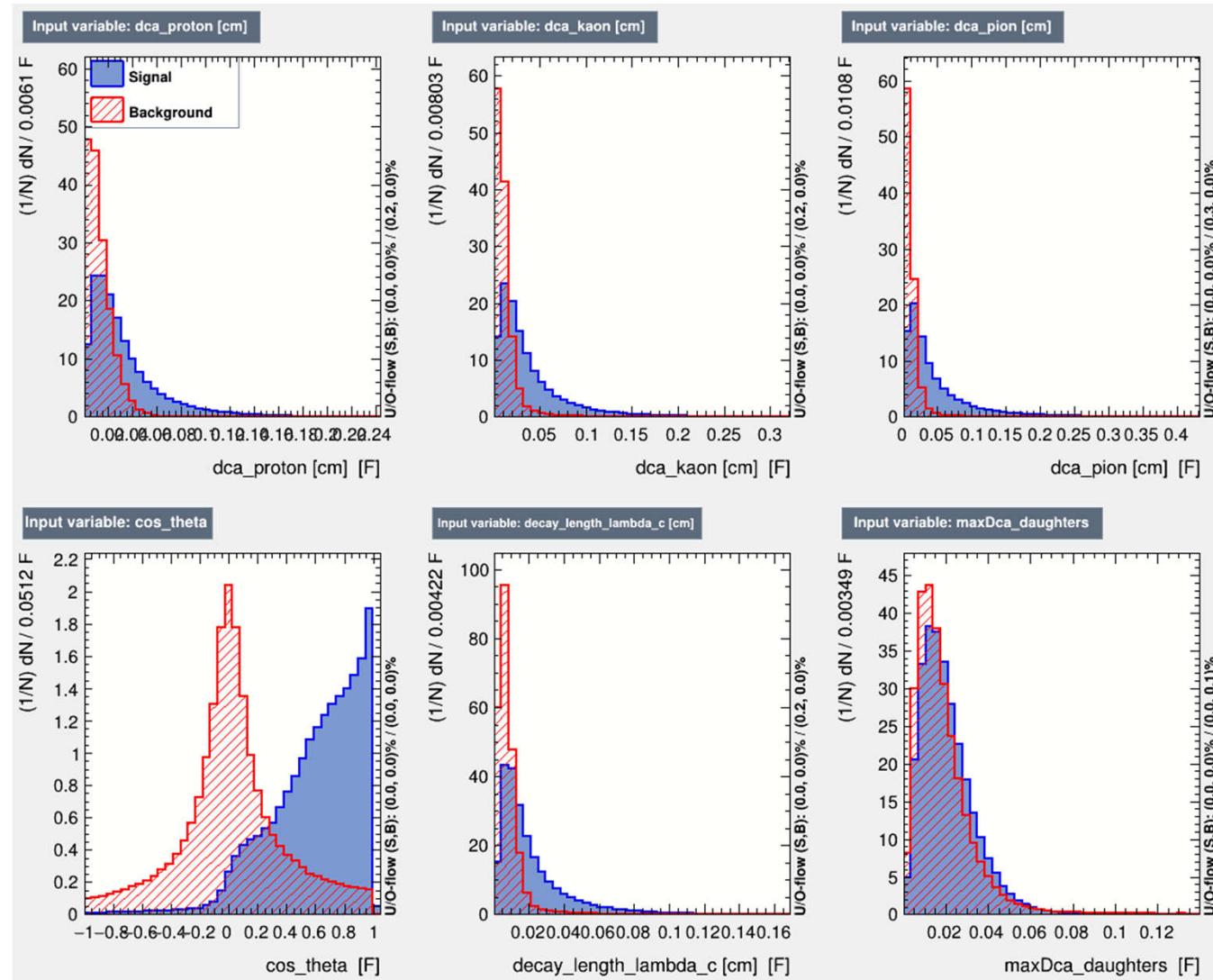
PID Simulation



TMVA Performance(e-D)

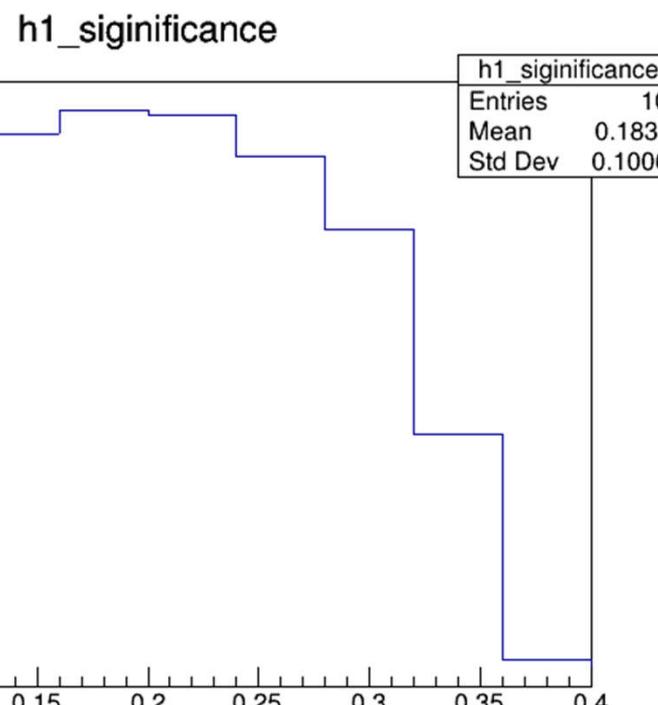


TMVA Performance(e-Pb)

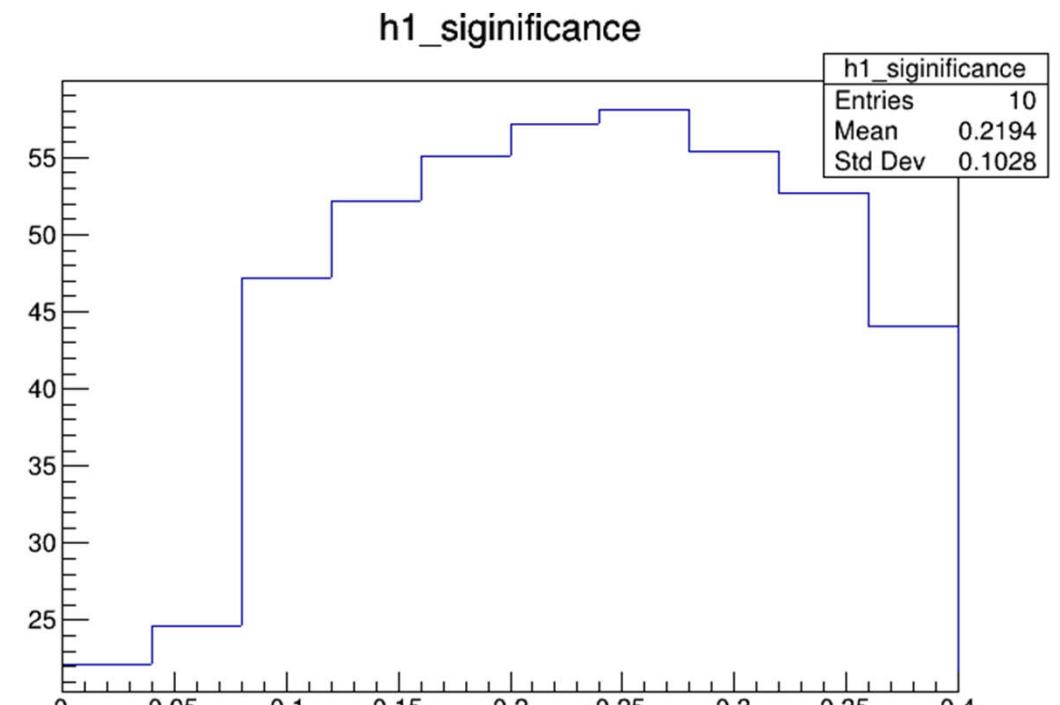


TMVA Tuning

- e-D



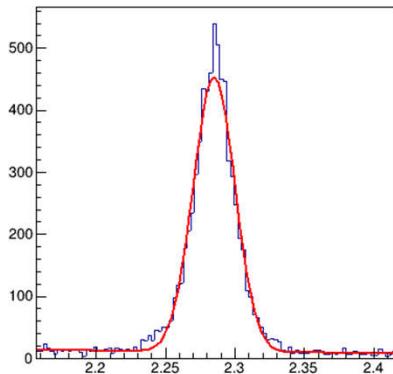
- e-Pb



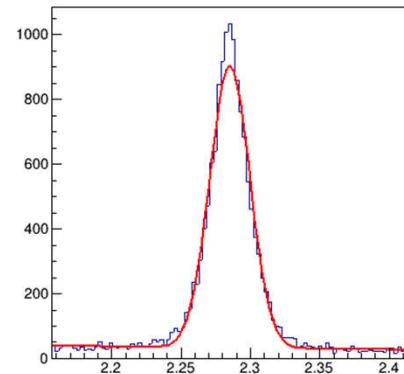
Mass Spectrum

- e-D

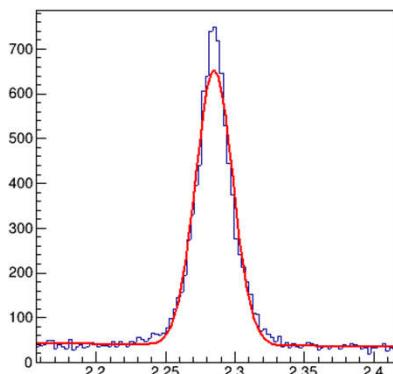
h1_invmass_pT_0



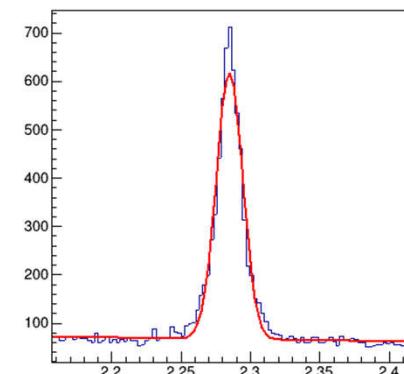
h1_invmass_pT_1



h1_invmass_pT_2

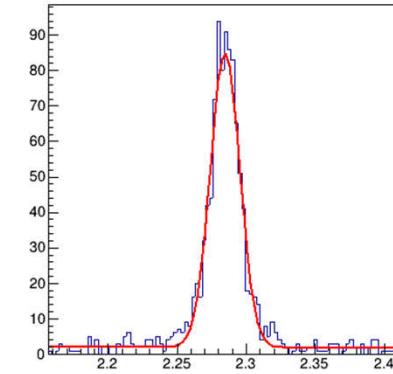


h1_invmass_pT_3

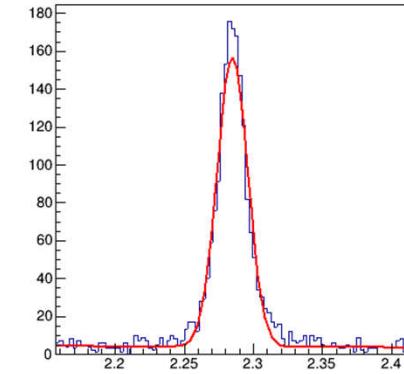


- e-Pb

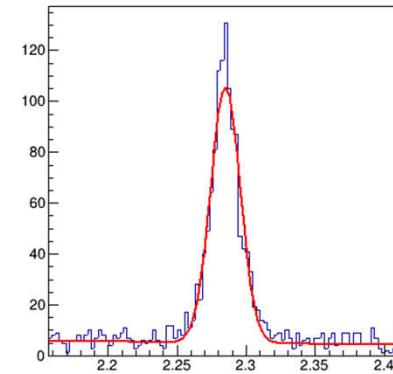
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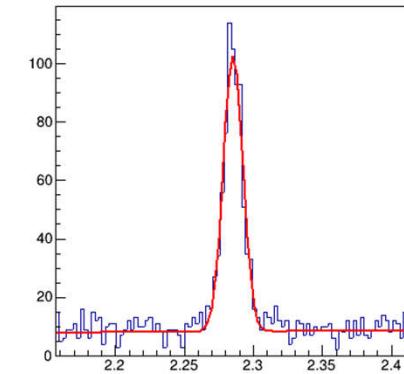
h1_invmass_pT_1



h1_invmass_pT_2

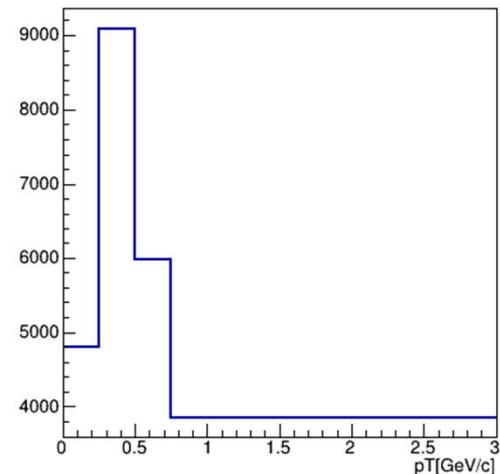


h1_invmass_pT_3

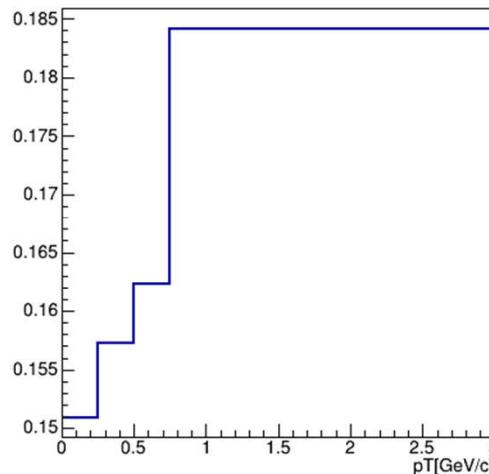


Result

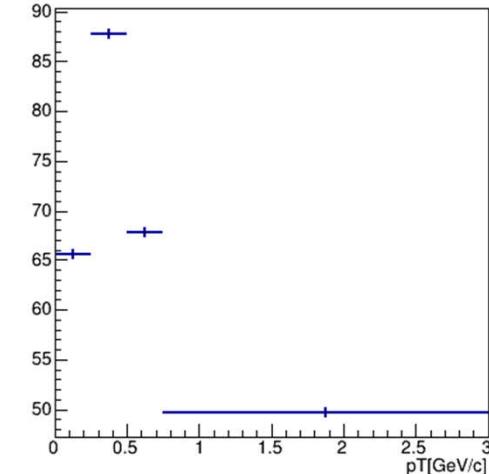
h1_production_pT



h1_efficiency_pT



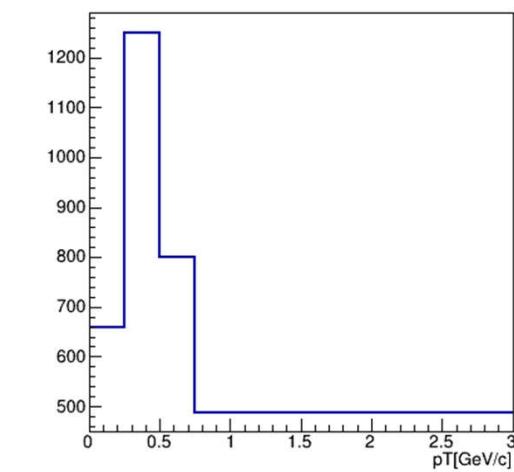
h1_significance_pT



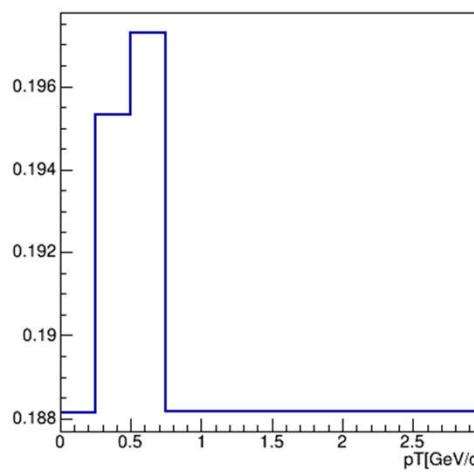
eD

$n_{sg} = 5936.8 * 2 \text{ fb}^{-1}$

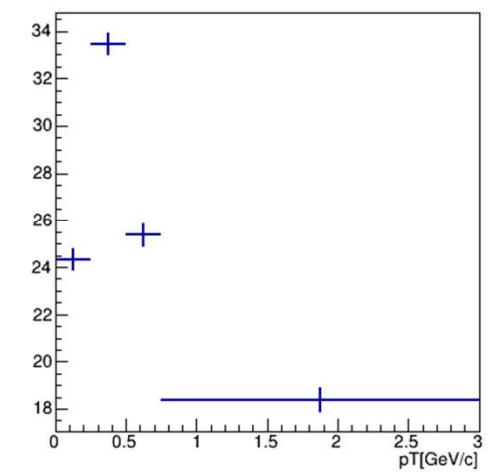
h1_production_pT



h1_efficiency_pT



h1_significance_pT



ePb

$n_{sg} = 1899 * 207 \text{ fb}^{-1}$

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