

SIDIS single e^- Trigger Rate on HGC Window Thickness

window thickness all in cm

	front	back
original	0.04(Kevlar)	0.10(Al)
real	0.24(CF)	0.64(Al)
CO2	0.50(Al)	1.28(Al)

- To get the ECAL trigger efficiency curves, I just use even e^- and π^- hit ECAL only and add beam on target backgrounds.
- To get offline PID performance (pion rejection), I just use even e^- and π^- hit ECAL only and add beam on target backgrounds.

Single e^- Trigger Rates

Rate (kHz)	FAEC	FAEC+LGC	FAEC+LGC+SPD
Original e^-	71.4	64.9	59.9
Real e^-	68.1 <i>70.7</i>	62.8 <i>65.14</i>	57.9 (3.3%) <i>60.0</i>
CO ₂ e^-	65.3 <i>69.36</i>	60.5 <i>64.0</i>	56.0 (6.5%) <i>59.2</i>
Original π^0	519.8	22.0	16.5
Real π^0	507.8 <i>559.9</i>	20.4 <i>22.5</i>	15.0 <i>16.8</i>
CO ₂ π^0	484.1 <i>546.3</i>	18.5 <i>21.2</i>	13.2 <i>15.3</i>

Single e⁻ Trigger Rates

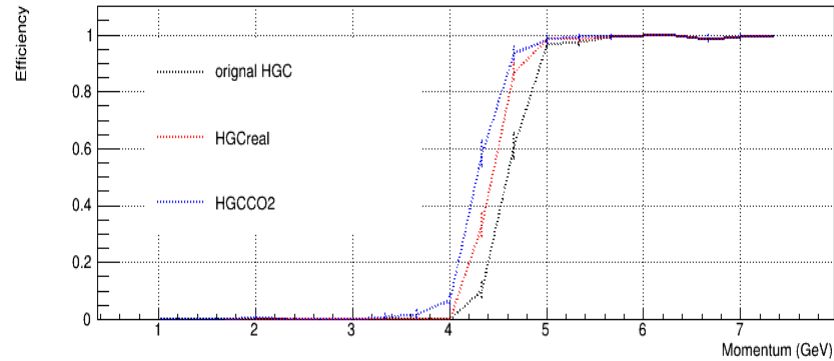
Rate (kHz)	FAEC	FAEC+LGC	FAEC+LGC+SPD
Original all hadrons no e	1937.54	34.4	26.1
Real all hadrons no e	1904.2 2080.1	32.1 35.6	24.4 27.3
CO ₂ all hadrons no e	1855.96 2112.69	30.1 34.9	22.9 26.8
Original total	2008.9	99.3	86
Real total	2150.8	100.7	87.3 (1.5%)
CO ₂ total	2182.0	98.9	86.0

Hadron Trigger Rates

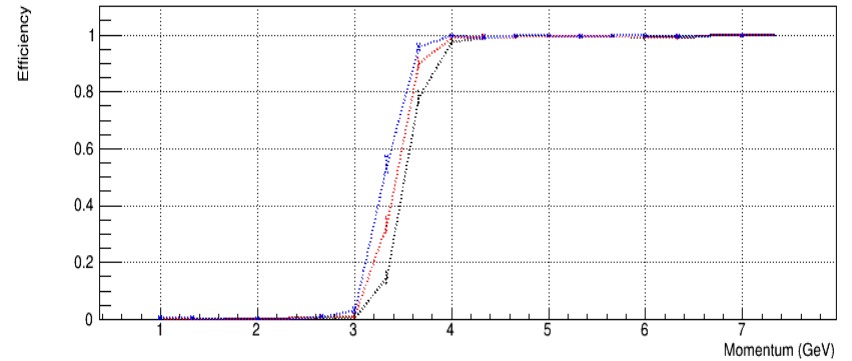
h_FA (kHz)	EC	EC+SPD
Original all hadrons no e-	10066.7	7507.2
Real all hadrons no e-	9970.78	7512.84
CO ₂ all hadrons no e-	9877.65	7530.12

Electron Trigger Efficiency

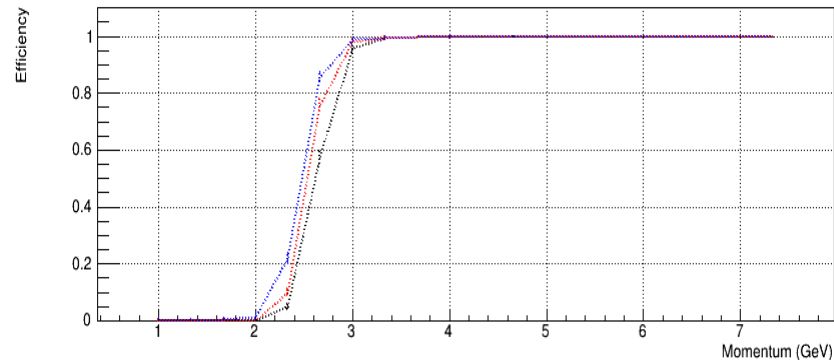
Electron Efficiency at 0.9 - 1.05 m



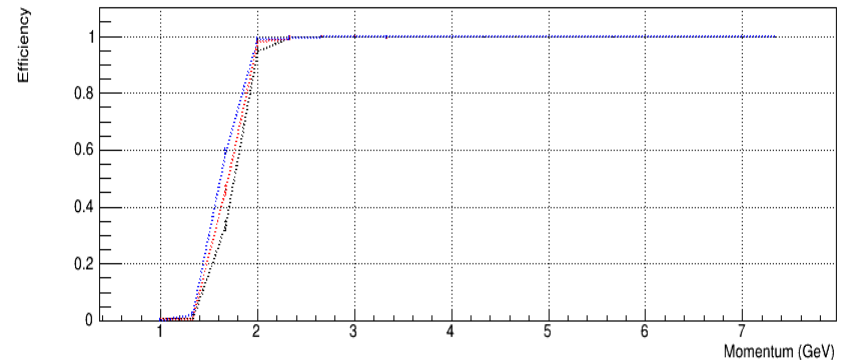
Electron Efficiency at 1.05 - 1.15 m



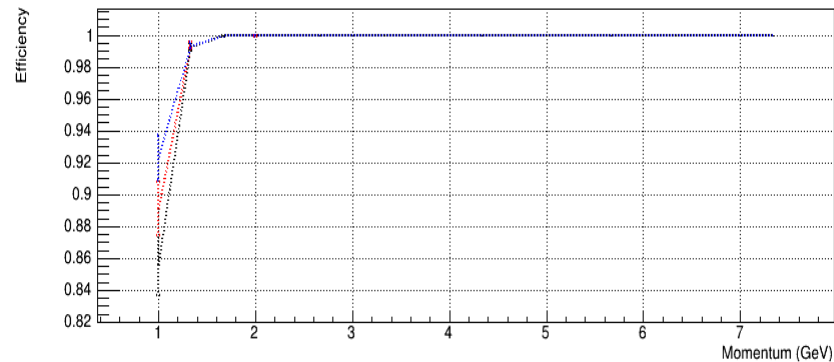
Electron Efficiency at 1.15 - 1.30 m



Electron Efficiency at 1.30 - 1.50 m

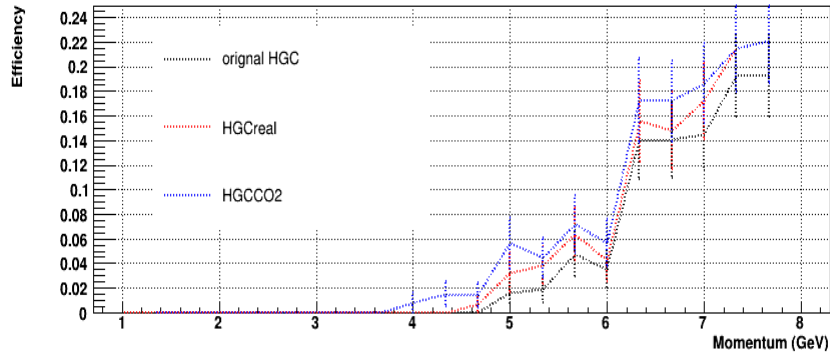


Electron Efficiency at 1.50 - 2.0 m

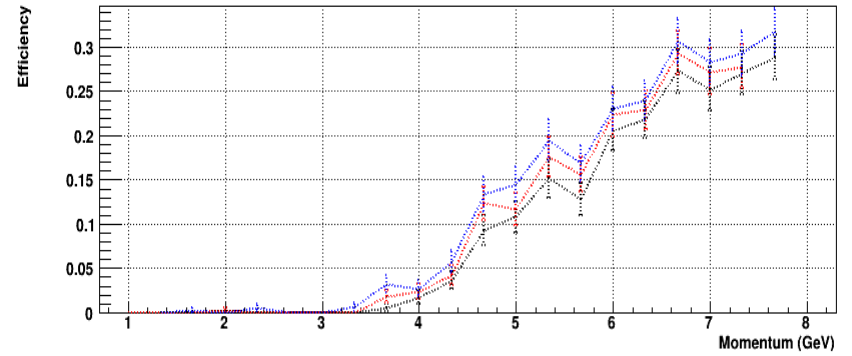


Pion Trigger Efficiency

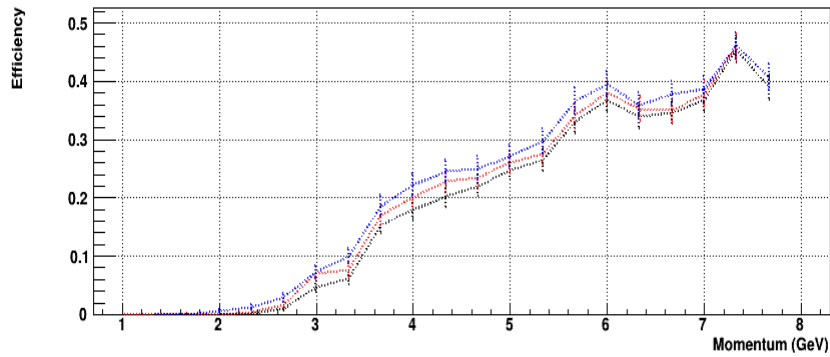
Pion Efficiency at 0.9 - 1.05 m



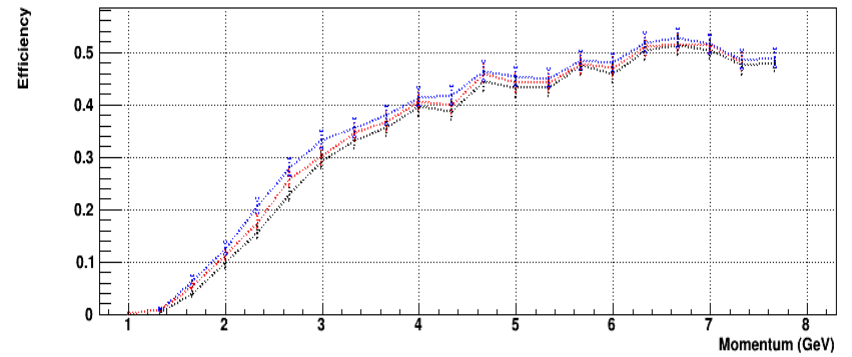
Pion Efficiency at 1.05 - 1.15 m



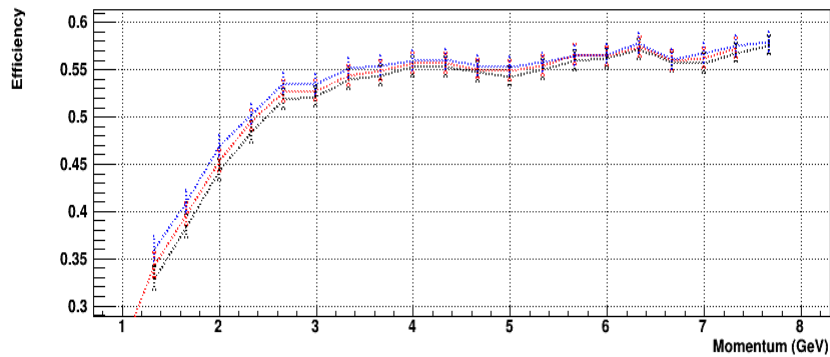
Pion Efficiency at 1.15 - 1.30 m



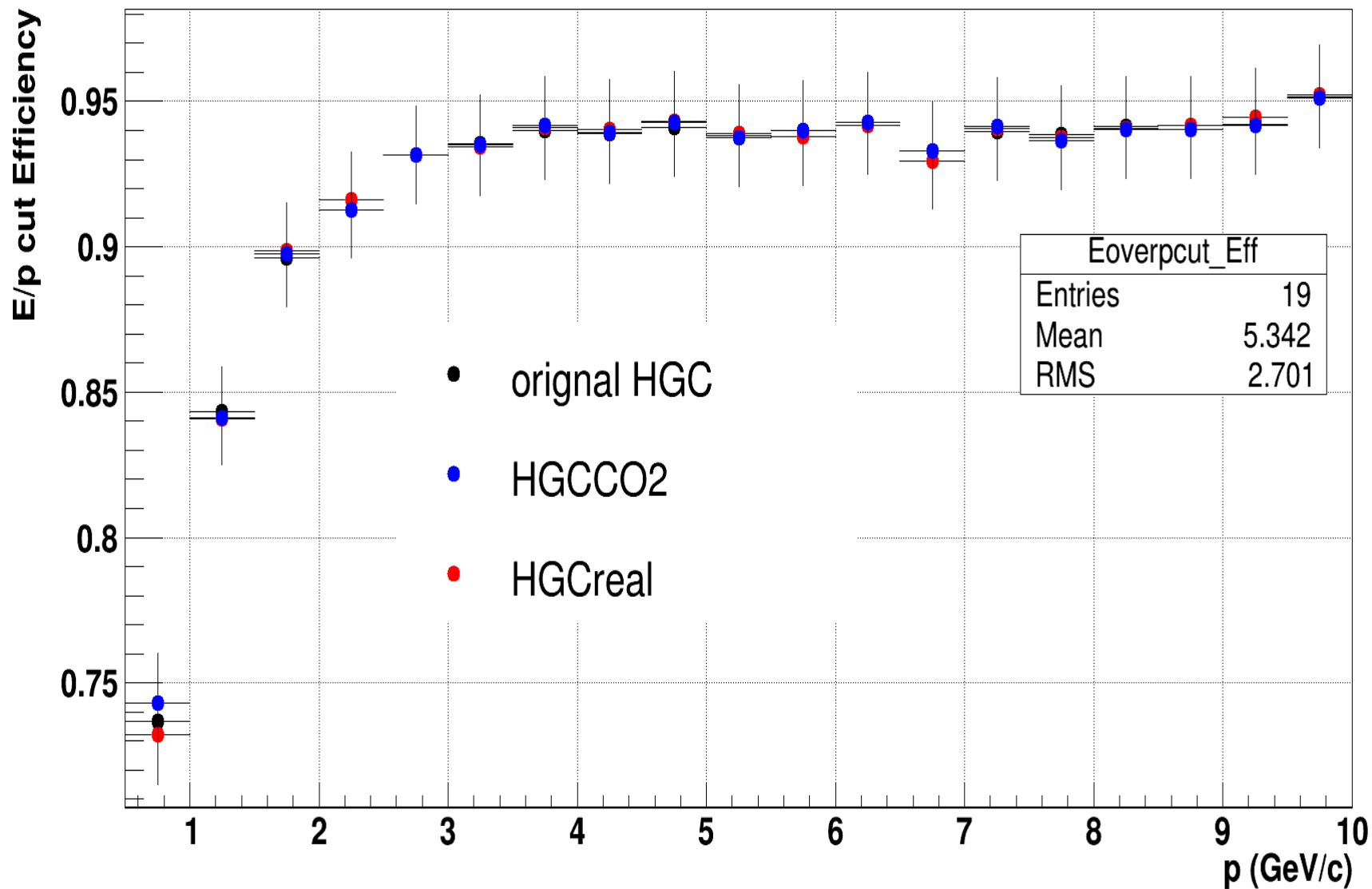
Pion Efficiency at 1.30 - 1.50 m



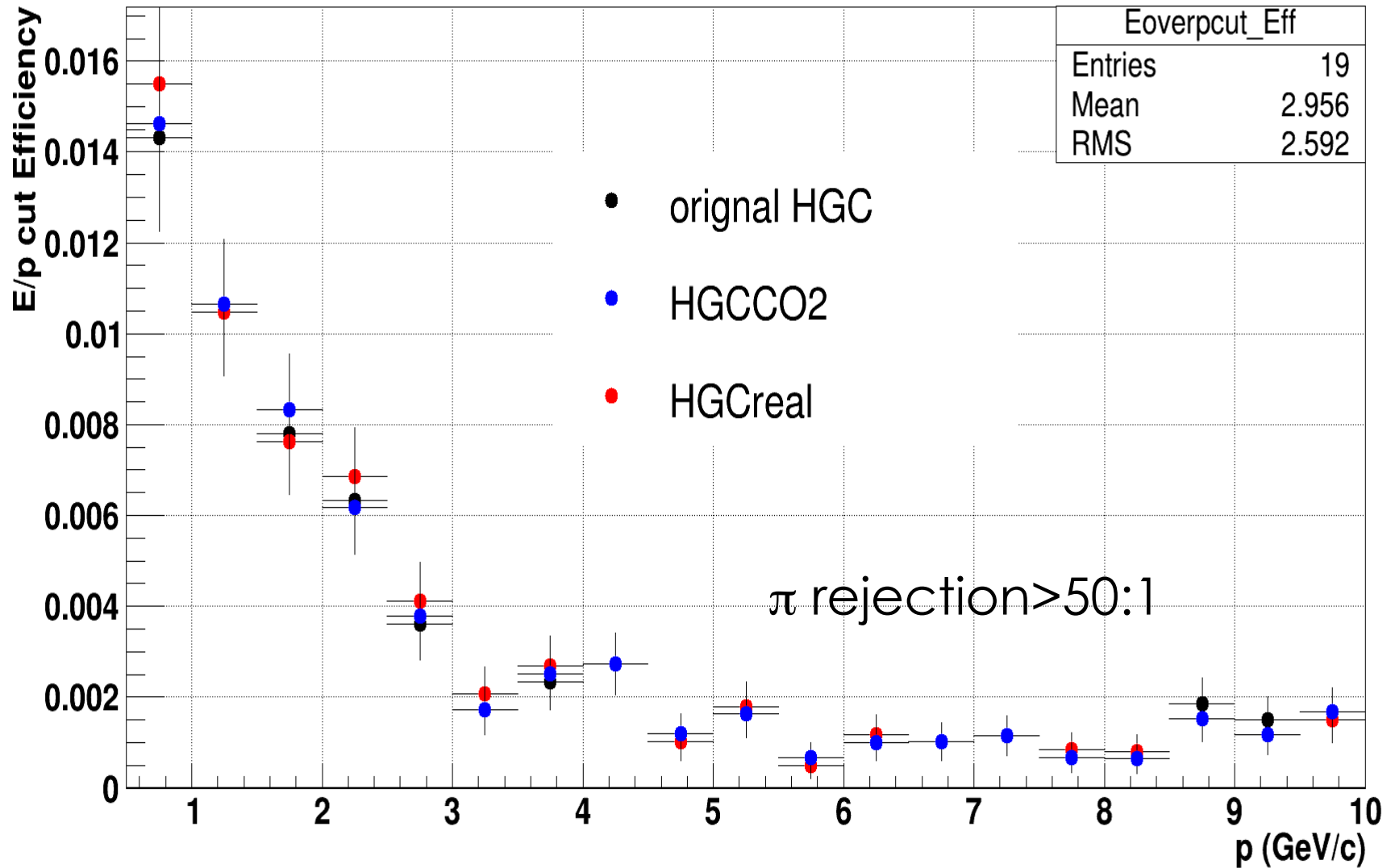
Pion Efficiency at 1.50 - 2.0 m



Offline PID performance



Offline PID performance



Summary and To-do

- The HGC window thicker thickness will increase the single trigger rate less than about 1.5%.
- The hadron trigger rate for thicker HGC window will increase about 0.4% for the CO₂ thickness and about 0.06% for the real thickness .
- The influence of the HGC window thickness is marginal on the offline ECAL PID performance.
- Random coincident trigger rates?

Backup