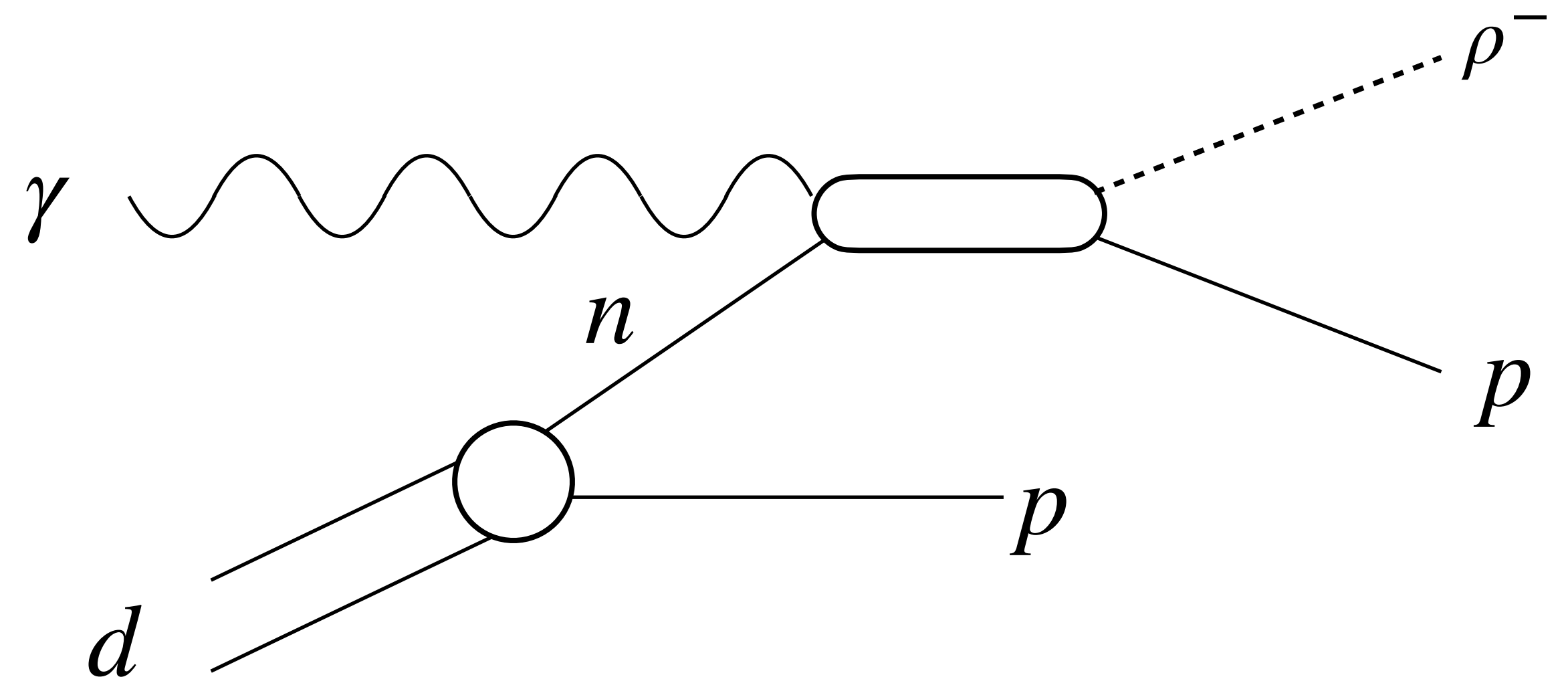


Update on $(\rho^- pp)$ SRC Analysis

Jackson Pybus

SRC Analysis

- Measurement channel: $\gamma A \rightarrow \pi^- \pi^0 pp(X)$
- Using ReactionFilter plugin to specify final-state
- Final state of 2 protons, 1 π^- , 2 γ
- Constraints:
 - Common Vertex
 - $m_{\gamma\gamma} = m_{\pi^0}$
- No missing-particle constraints applied



Selection Criteria Applied

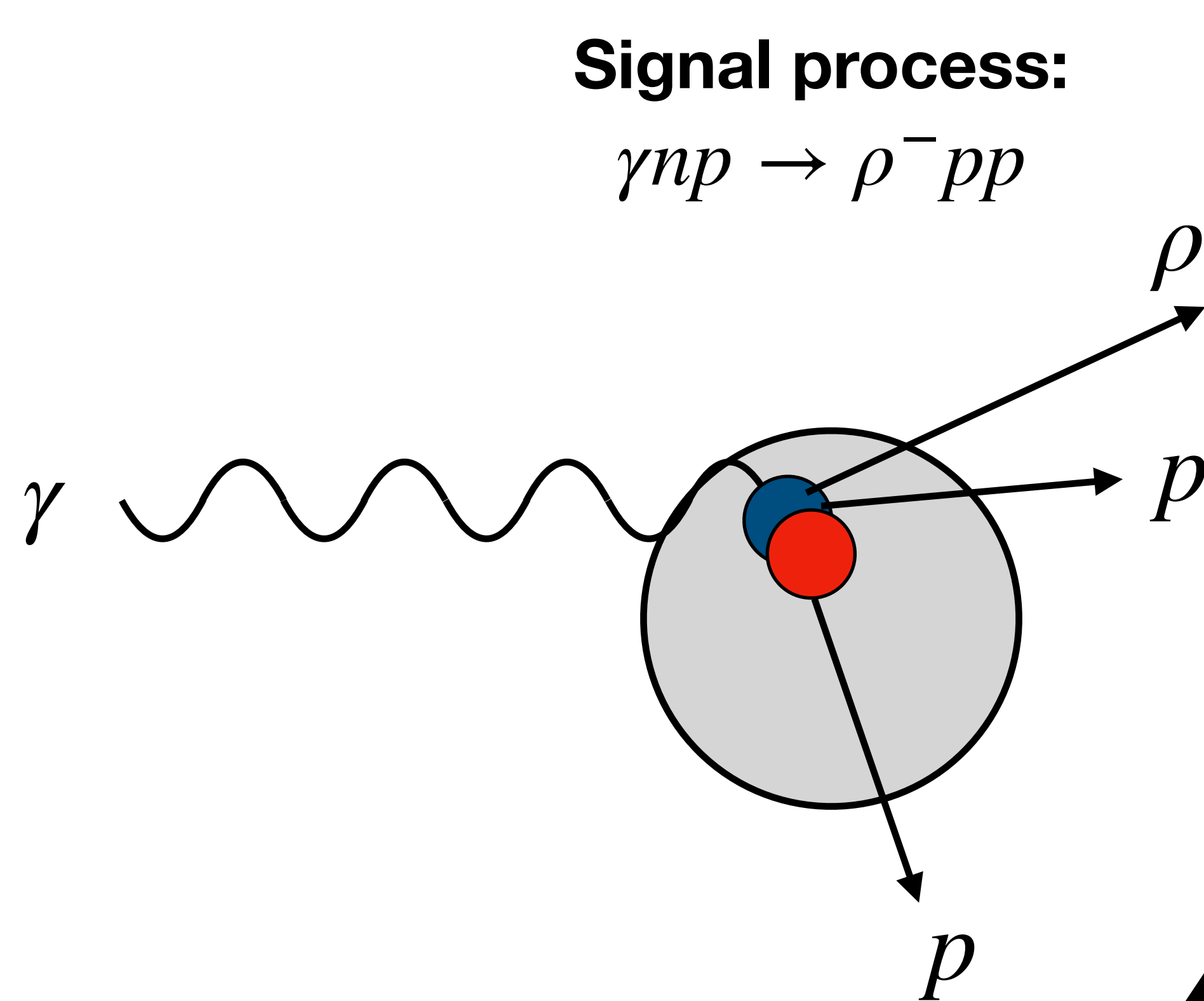
- DSelector used for post-skimming
- Selector Cuts:
 - 0 unused tracks
 - 0 unused showers
 - PID FOM > 0.1
 - Kin Fit CL > 0.0001
 - Shower Quality > 0.5
 - $6 < \text{Beam Energy} < 10.8 \text{ GeV}$
- High-momentum proton designated “lead”, low-momentum proton designated “recoil”
- Further cuts applied:
 - Vertex cuts
 - $E_{lead} + E_{\rho} > 7 \text{ GeV}$
 - ω background cuts

Background Separation

Signal process:

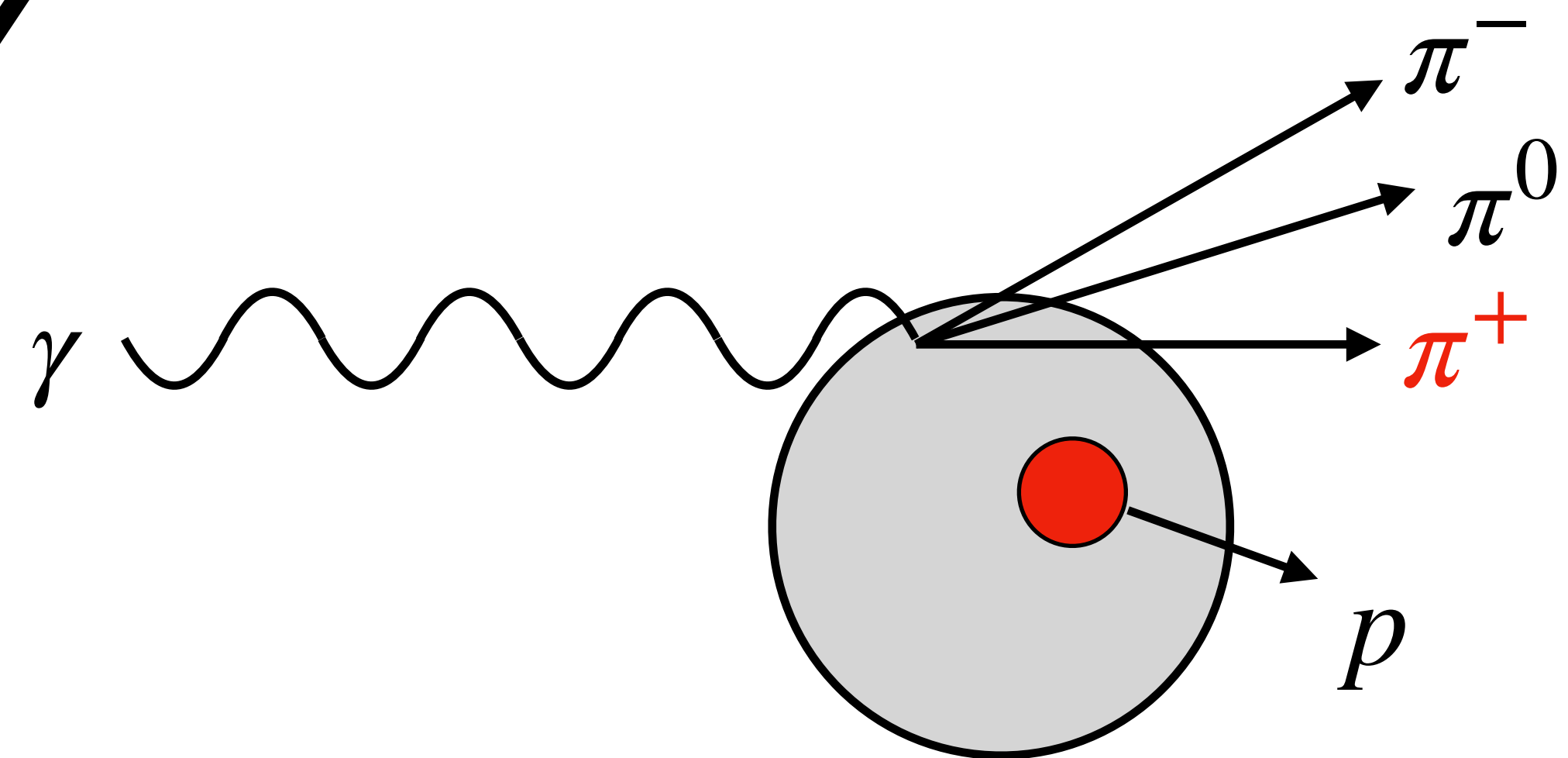
$$\gamma np \rightarrow \rho^- pp$$

$$\rho^- \rightarrow \pi^- \pi^0$$



Largest Background

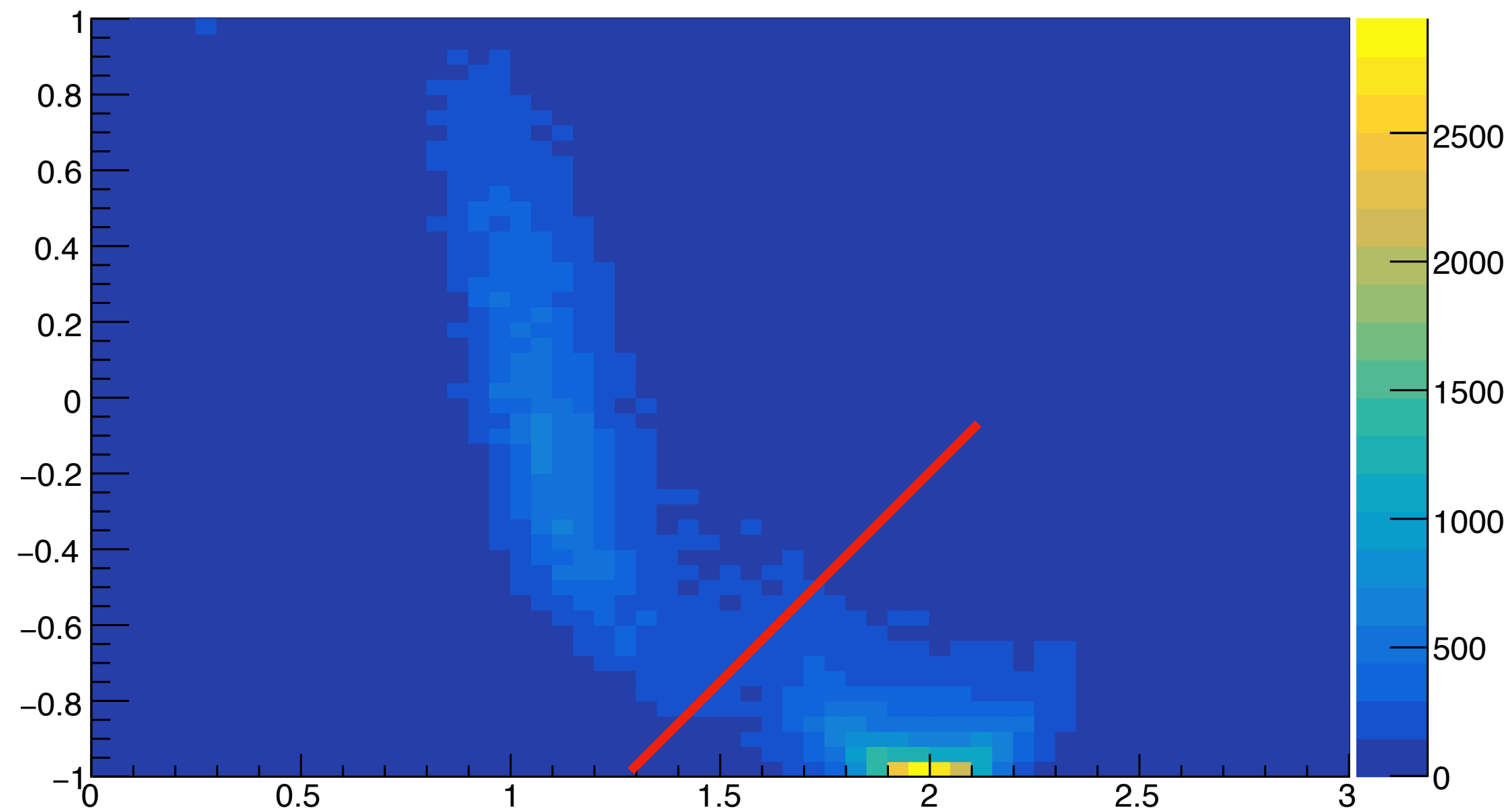
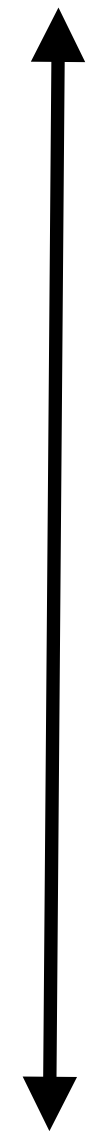
$$\gamma A \rightarrow \pi^+ \pi^- \pi^0 p(X)$$



Previous Background Separation Method

Carbon-12

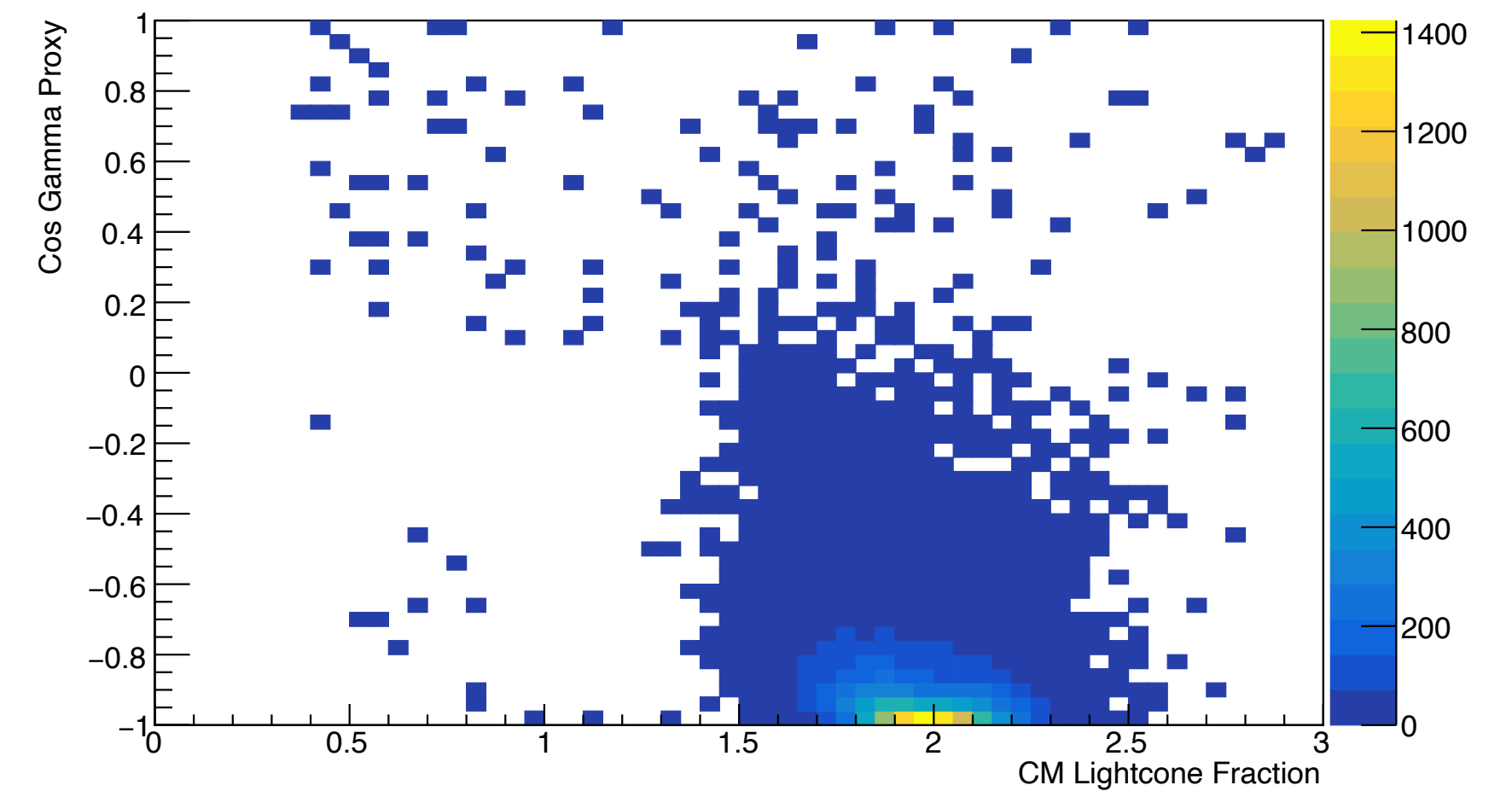
Colinear
Pair



SRC Pair Lightcone Fraction

Back-to-Back
Pair

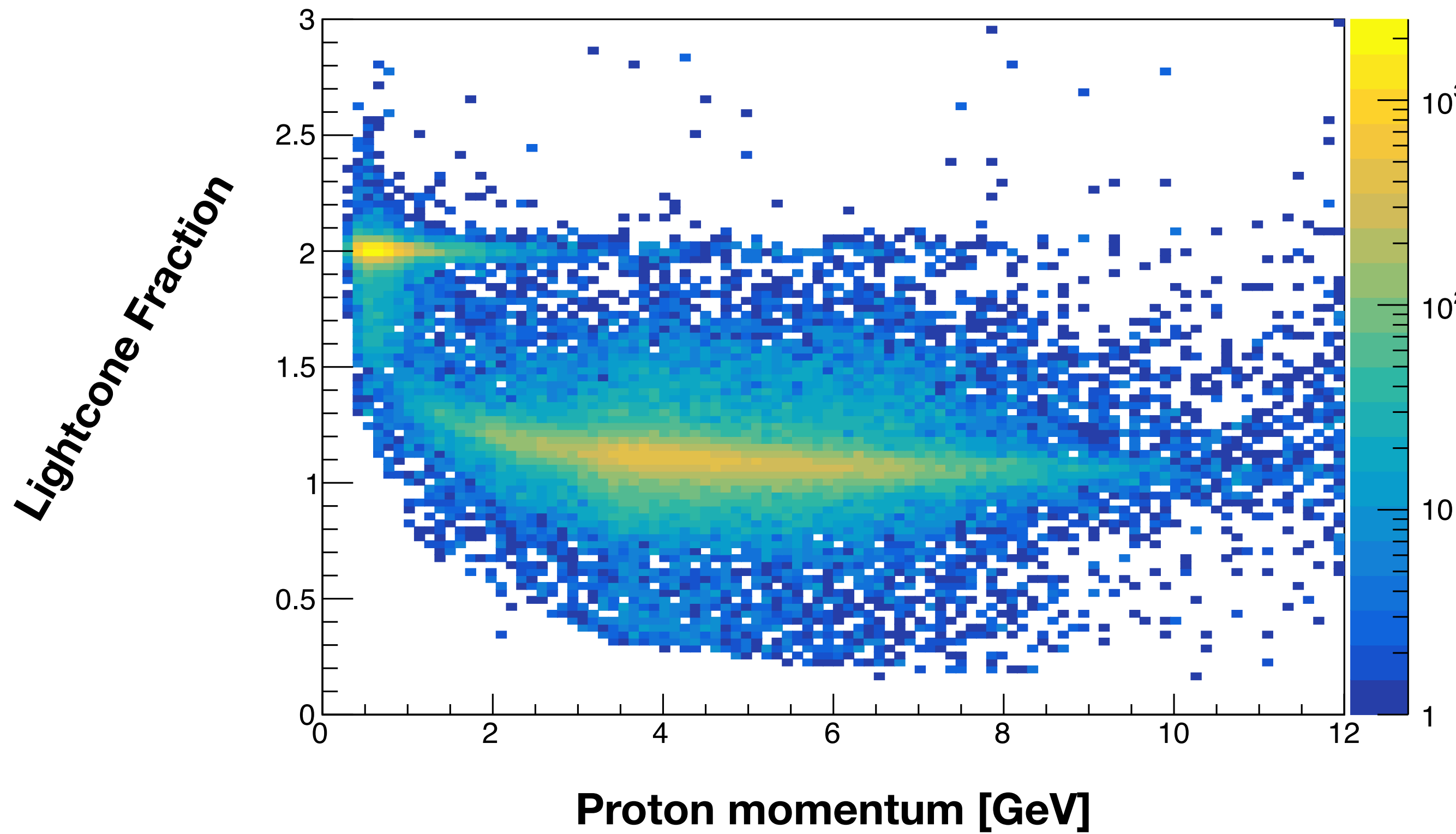
GCF Simulation



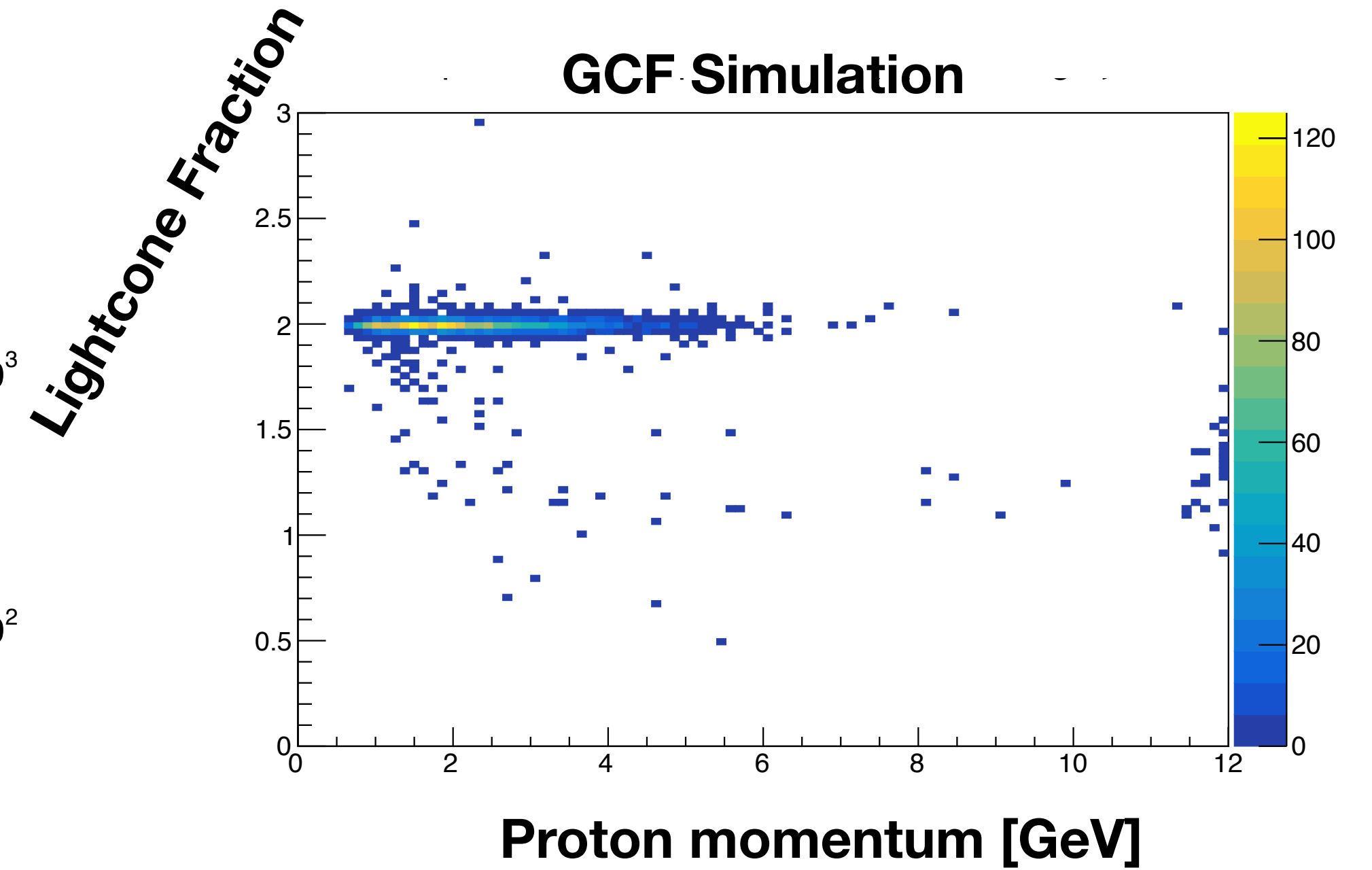
This requires the use of “proxy” variable $\cos \gamma$, which makes some assumptions about the initial state

Looking at background kinematics

Deuterium

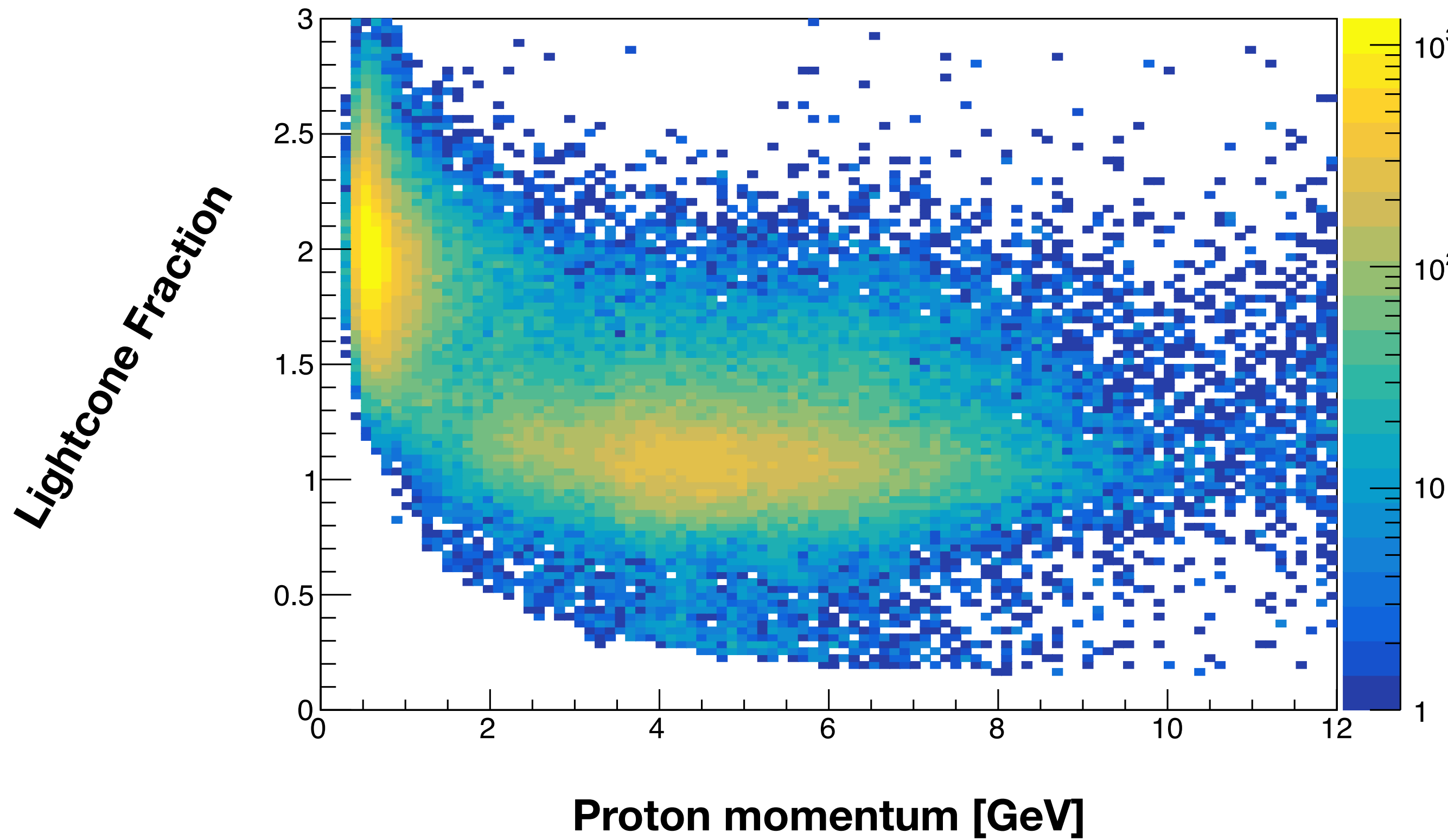


GCF Simulation

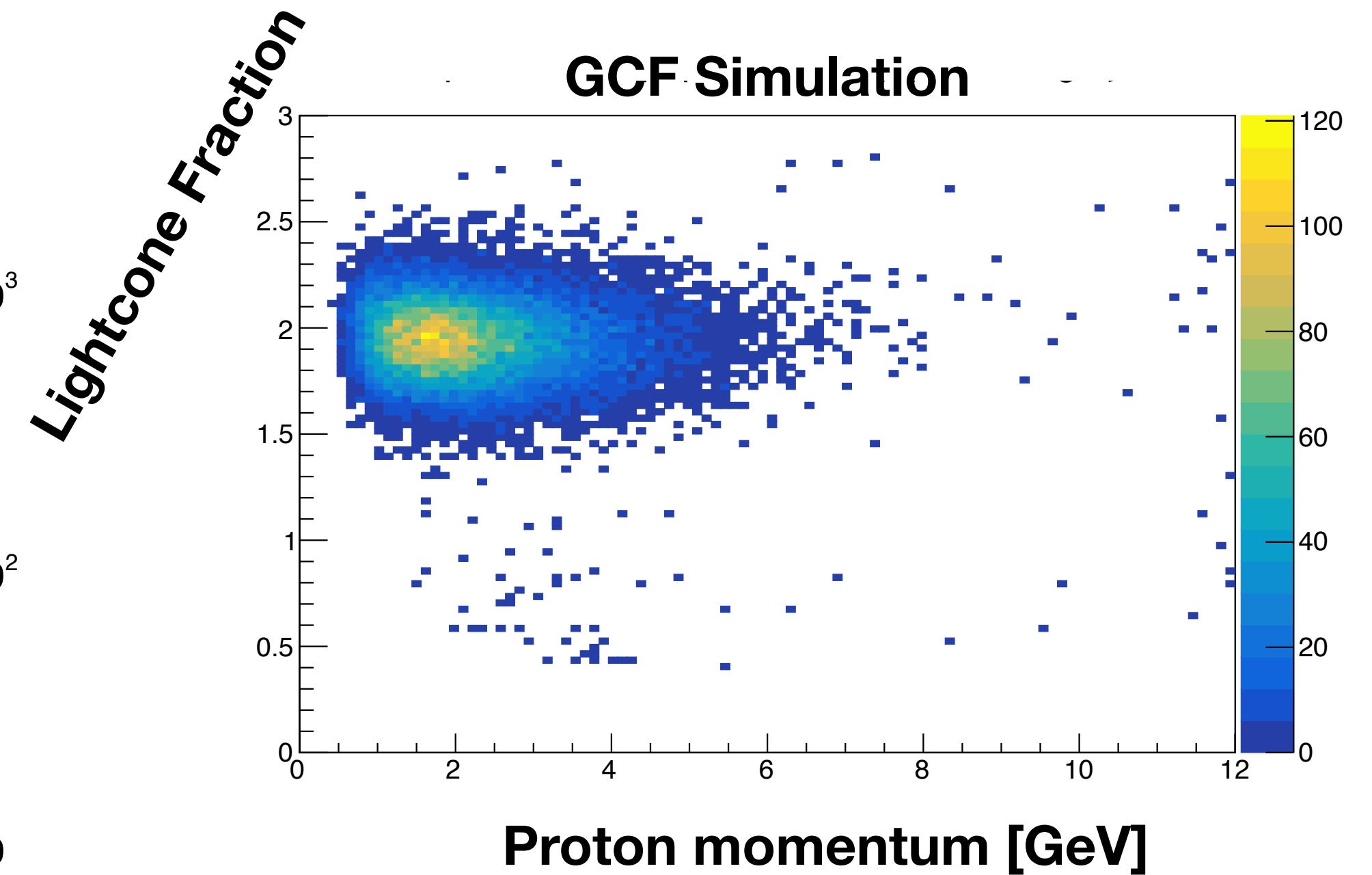


Looking at background kinematics

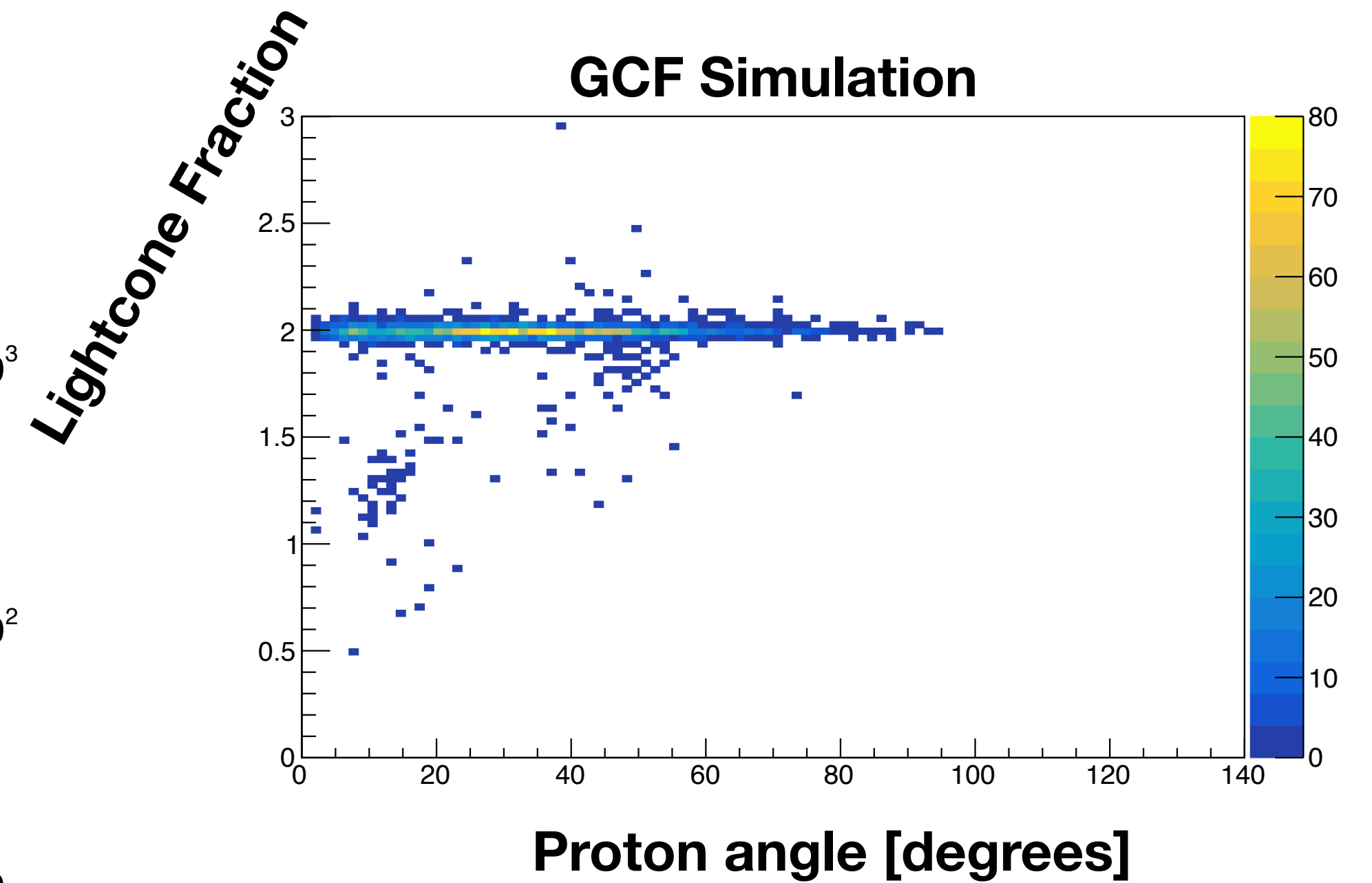
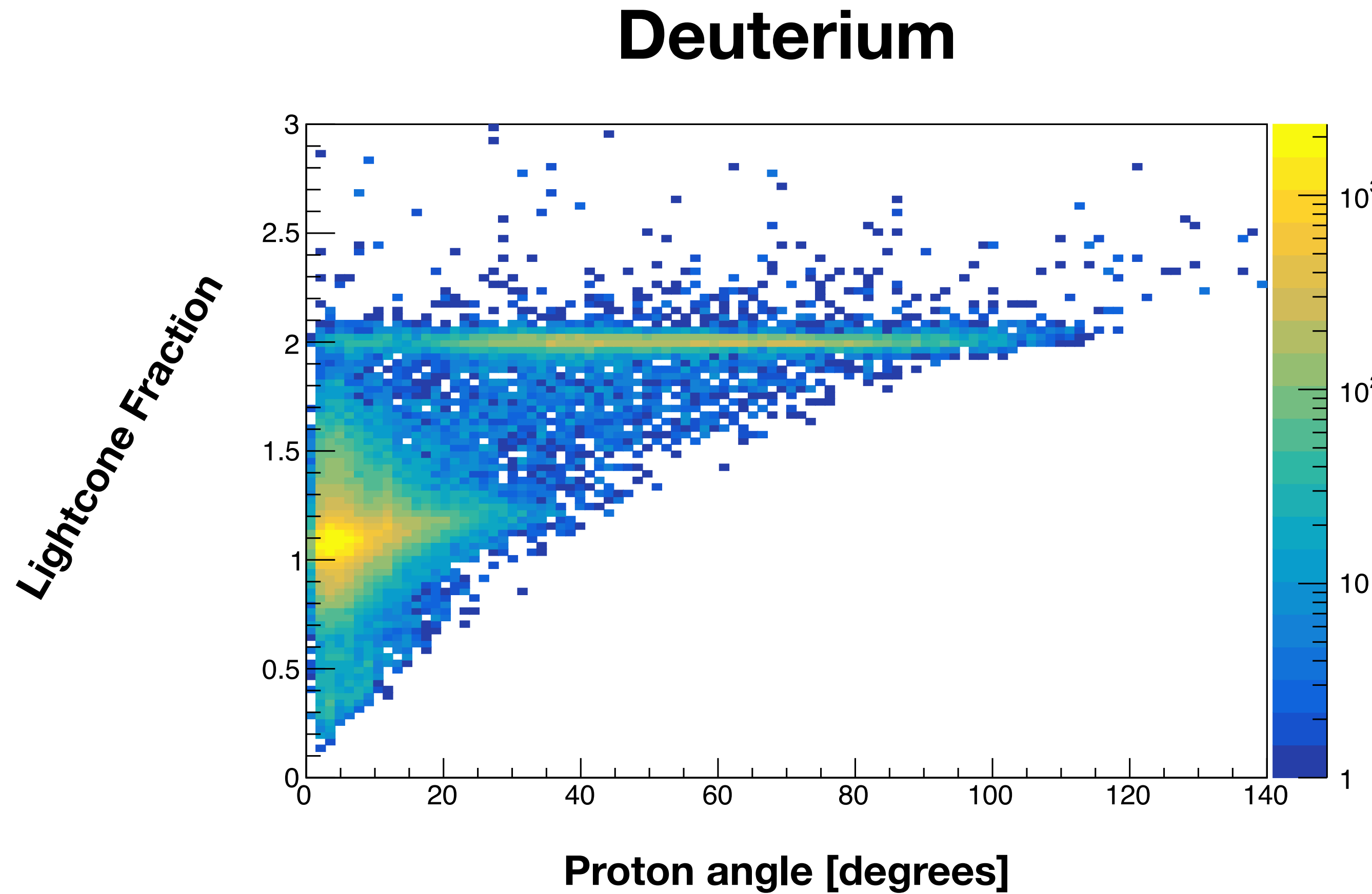
Carbon-12



GCF Simulation

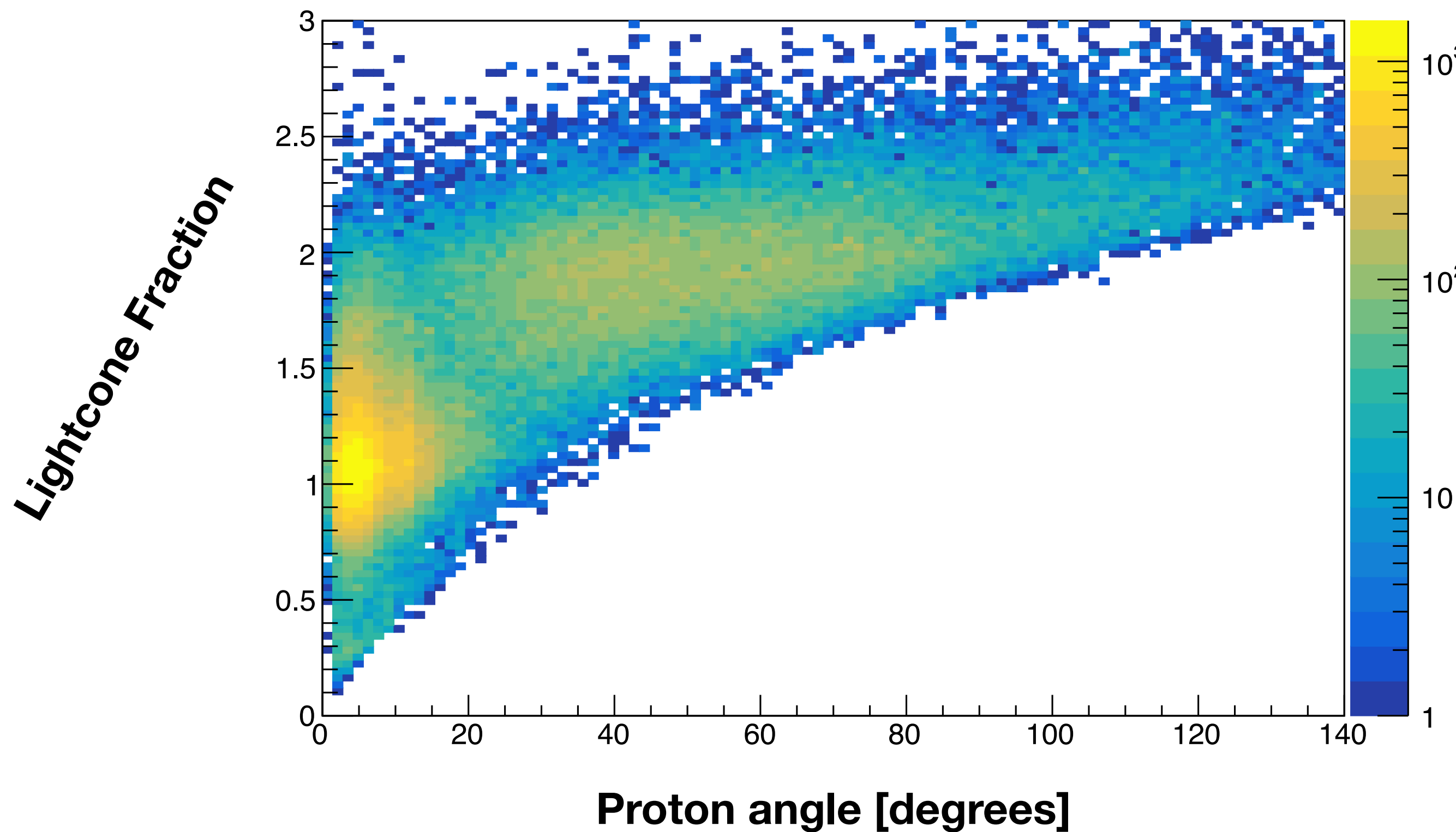


Looking at background kinematics



Looking at background kinematics

Carbon-12



GCF Simulation

