

# ESR Readiness

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Center for Frontiers  
in Nuclear Science

# Simulation status



| generator | beam species | energy | polarization | Q2 range | runner    | status                 | purpose          |
|-----------|--------------|--------|--------------|----------|-----------|------------------------|------------------|
| BeAGLE    | eHe3         | 9x166  | No           | > 1 GeV  | Win       | Submitted              | eA DIS           |
|           | eAg          | 9x115  | No           | > 1 GeV  | Arjun     | Submitted for Q2 < 100 |                  |
|           | eAu          | 9x100  | No           | > 1 GeV  | Win       | Submitted              |                  |
| Pythia 8  | ep           | 9x275  | No           | > 1 GeV  | Brian     | Available              | NC, CC DIS       |
|           |              | 9x130  | No           | > 1 GeV  |           | Available              |                  |
|           |              | 5x130  | No           | > 1 GeV  |           | Submitted              |                  |
| Pythia 6  | ep           | 9x275  | No           | > 0 GeV  | Ralf      | Submitted              | Pi BG            |
|           |              | 9x130  | No           | > 0 GeV  |           | Submitted              |                  |
| DJANGO    | ep           | 9x275  | Yes          | > 1 GeV  | Churamani | Submitted              | Polarized CC DIS |
|           |              | 9x275  | Yes          | > 1 GeV  | Sayak     | in progress            | Polarized NC DIS |
|           |              | 9x130  | No           | > 1 GeV  | Stephen   |                        | QED radiation    |
|           |              | 9x275  | No           | > 1 GeV  |           |                        |                  |

- **Waiting for July campaign files**
- BeAGLE and tagging:
  - Alex updated OMD position ([PR#1139](#)), will be included in new campaign
  - New files were ran with [updated eic-smear](#). Issue of missing spectators should be gone
- New DJANGO files for parity violating structure functions
  - Churamani's [update](#), Sayak's [update](#)
- Will also produce QED radiative event samples with DJANGO

“ReconstructedParticle  
Collection”



$\geq 1$  track &  $\geq 1$  cluster  
Negatively charge



Isolated cluster:  
 $E_0/\Sigma E_{\delta R < 0.7} > 0.9$



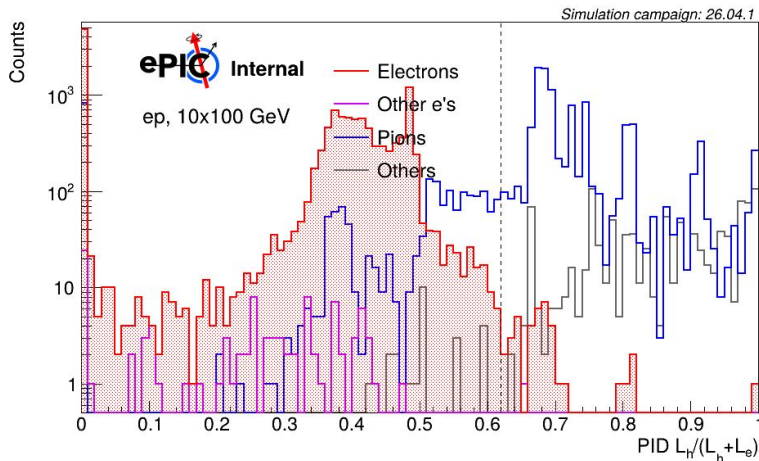
$0.8 < E/p < 1.2$



PID likelihood  
 $L_h/(L_h + L_e) > 0.62$



Highest  $p_T$



If none satisfies E/p selection

$158^\circ < \theta < 162^\circ$  or  $22^\circ < \theta < 33^\circ$   
And  $p_t > 1$

Proposing new set of eID cuts

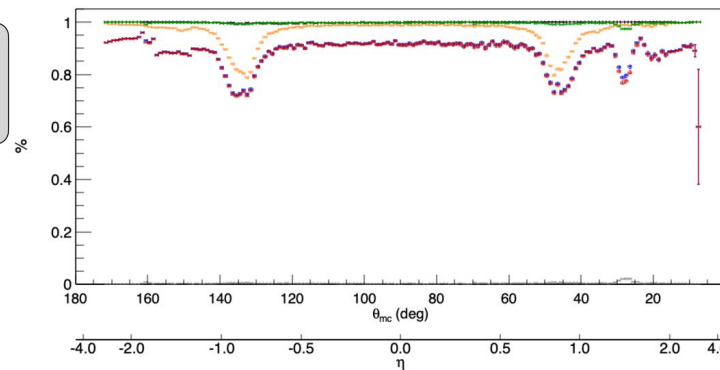
- [Recent discussions](#)
- Updating snippet codes

Added PID lookup table cut in eID:

Lh: Max likelihood of being h+

Le: Max Likelihood of being e-

- Calculate likelihood ratio from PID LUT accessed through “Reconstructed Particle” list
- Veto if  $L_h / (L_h + L_e) > 0.62$



ePIC Work in Progress

ep, 10x100 GeV

- e track eff.
- e cluster eff.
- eID efficiency
- eID purity
- Overall eID rate
- Contamination

Simulation campaign: 26.04.1