SoLID Software Development Update

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Topics Covered

- Overall design and framework
- Event Generators
- Background simulations
- PVDIS Baffle optimization
- GEM Reponse and digitization

Comments - Steve Wood

It appears that some photons make it through the baffels. Are these straight-throughs an issue in terms of rates, etc? Are secondaries created on the baffles fully simulated?

These need to be optimized to block photons, rates will be simulated with optimized baffles. Secondaries are included.

Slide 18: I forget the verbal explanation given on the "Digitization Results" slide on signal and background. More detail on this slides so they can be understood without the verbal discussion. (Slides make things look scary/hopeless.)

Will add more text

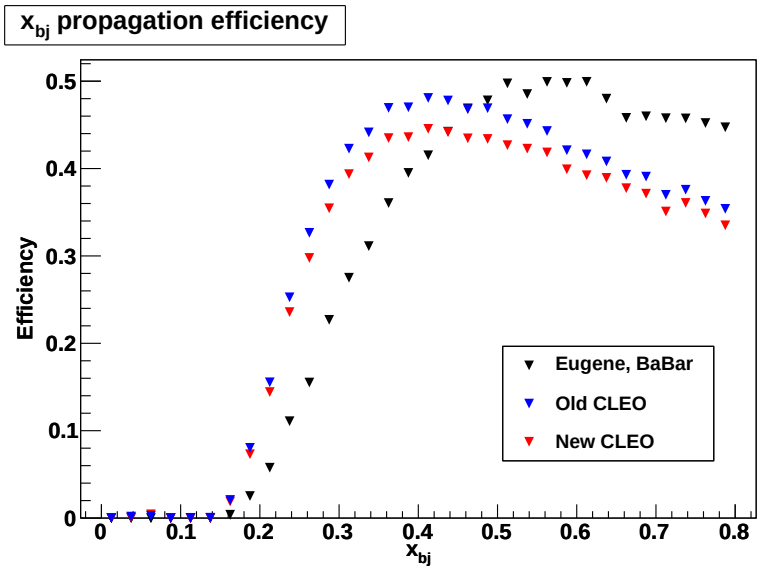
Comments - Pavel

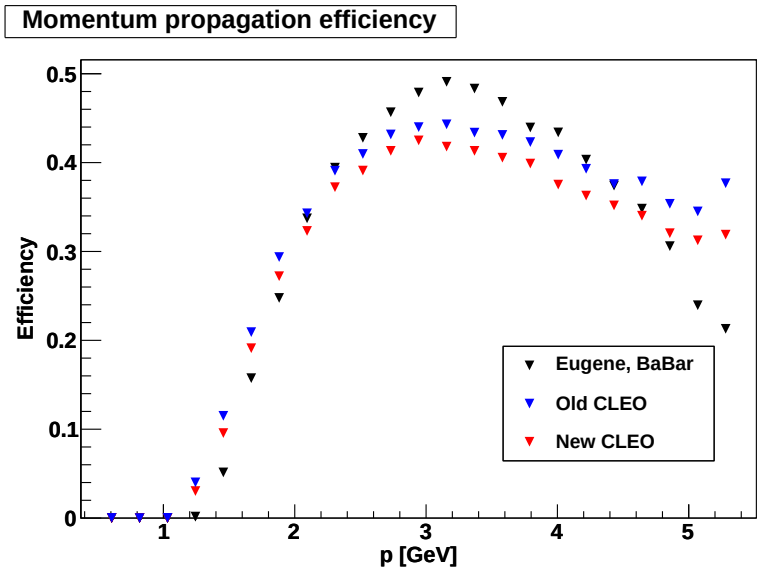
Regarding baffles design and optimization, it would be interesting to find the balance between the energy of the direct photons coming from the target into the detectors, and the energy of the photons resulting from multiple cascades in the baffles and at the edges of the slits, flanges, etc. When the direct photons are stopped completely, the cascade photons would dominate in the detector background. Major sources of these cascade photons may be then found, and possibly some measures to shield against them taken. Areas closest to the beamline are the "usual suspects" for the source locations.

This is part of the longer term design.

Baffles Latest CLEO Design - Acceptance

- Latest design for CLEO had a loss in field integral
- Reoptimized baffles

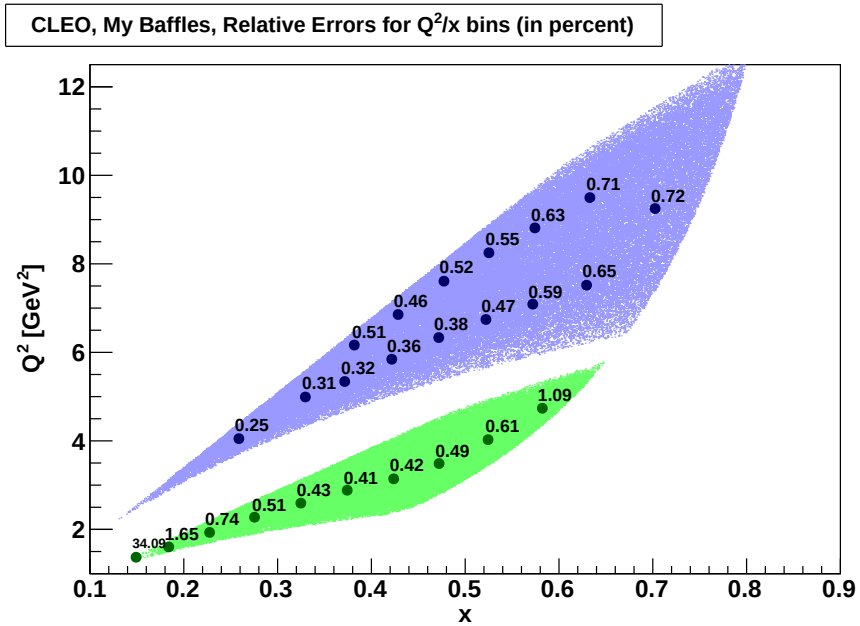




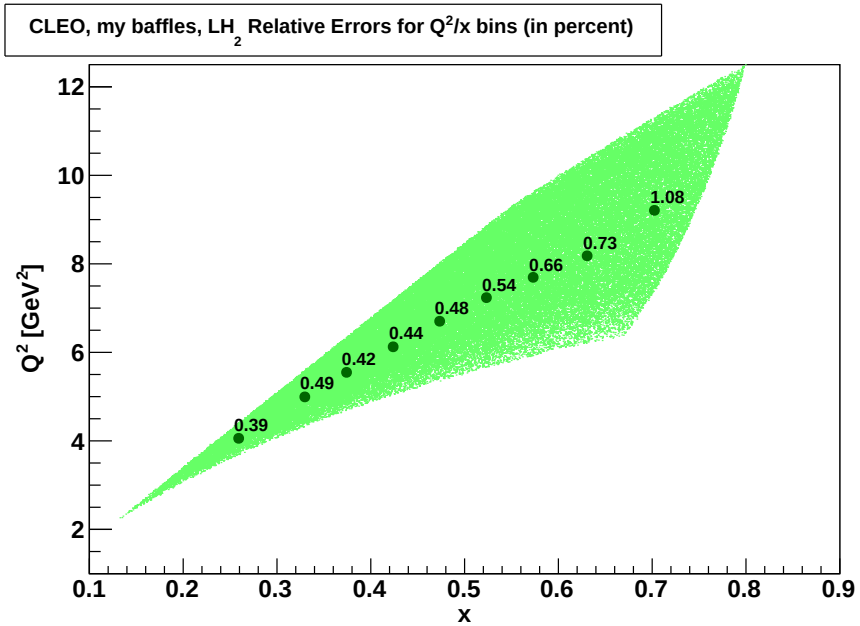
- Loss of acceptance few percent level
- Difference between old and new CLEO relatively small

Baffles Latest CLEO Design - FOM

LD_2



LD_2



	Old CLEO	New CLEO
Higher Twist	1.7e-3	1.8e-3
CSV	0.012	0.013
d/u	0.028	0.028

- Figure of Merit roughly the same

Software Status - GEMC side

- Generators
  - Radiative effects, need to enumerate needs
  - π asymmetry
  - F_2 inelastic for lower Q^2, resonance data - fits by Bosted on LH_2 and LD_2
  - Hyperon decay

Software Status - Digitization/analysis side

- Detectors
  - Review/clean up GEM digitization, double check multisampling filtering
  - Cerenkov and calorimeter need similar framework developed
  - Charged flux through PMT glass in GEMC based on background rates
  - Need to evaluate pileup/digitization in full background simulation
  - Need to look at pion asymmetry effects in pion-sensitive detectors
  - Low energy pions in Ecal and their response
  - Response to electromagnetic background in calorimeter