Exclusive Meson Production Workshop
Jefferson Lab
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Deep ϕ-production in SoLiD with a Transversely polarized NH_3 target

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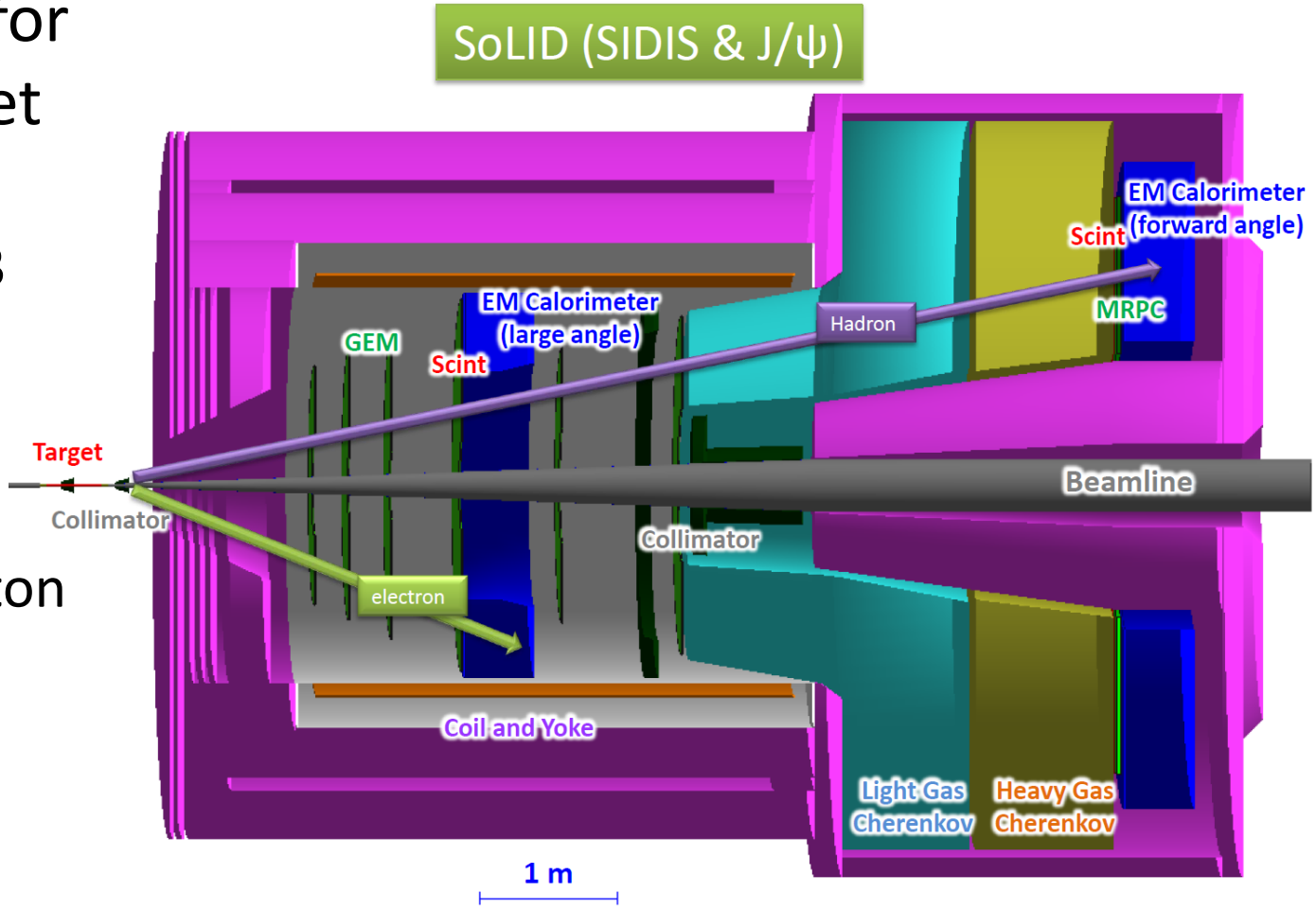
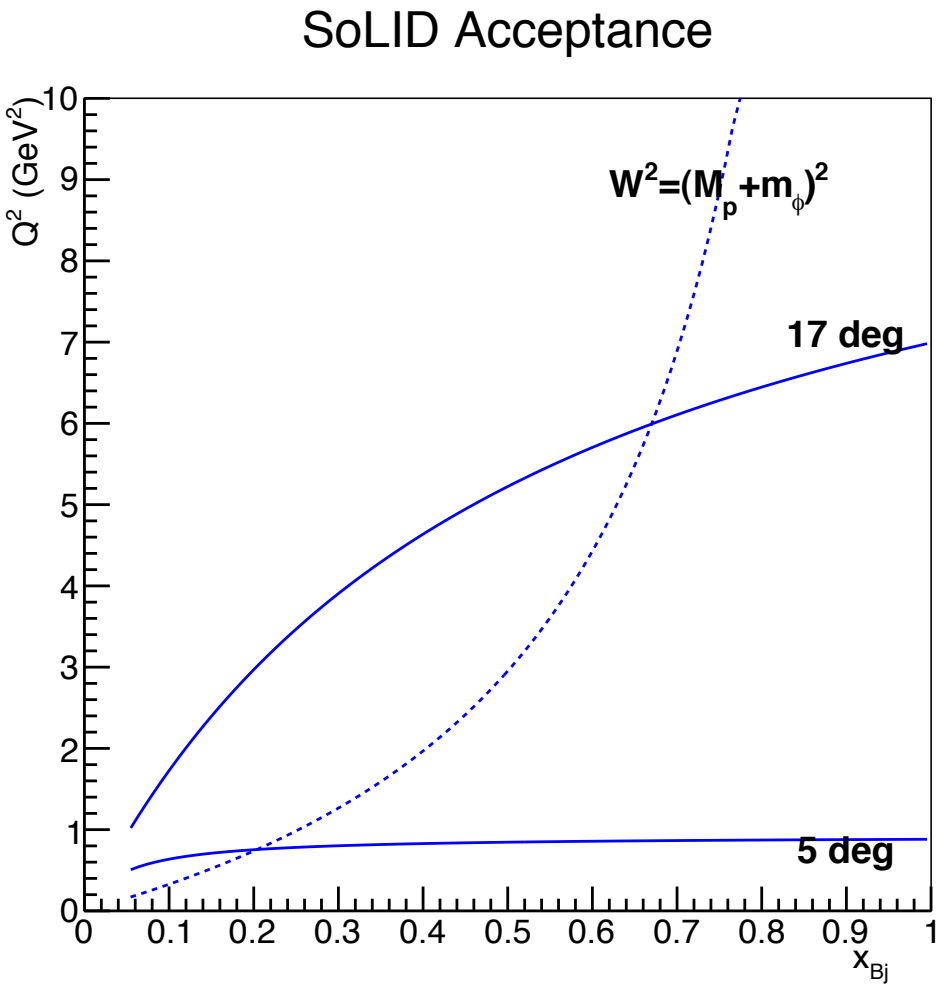
Solenoidal high **L**uminosity **D**etector

- Configuration for upstream target
  - Transversely polarized NH3
  - 110 nA on 3 cm NH3
  - $5 \bullet 10^{35}$ polarized proton luminosity



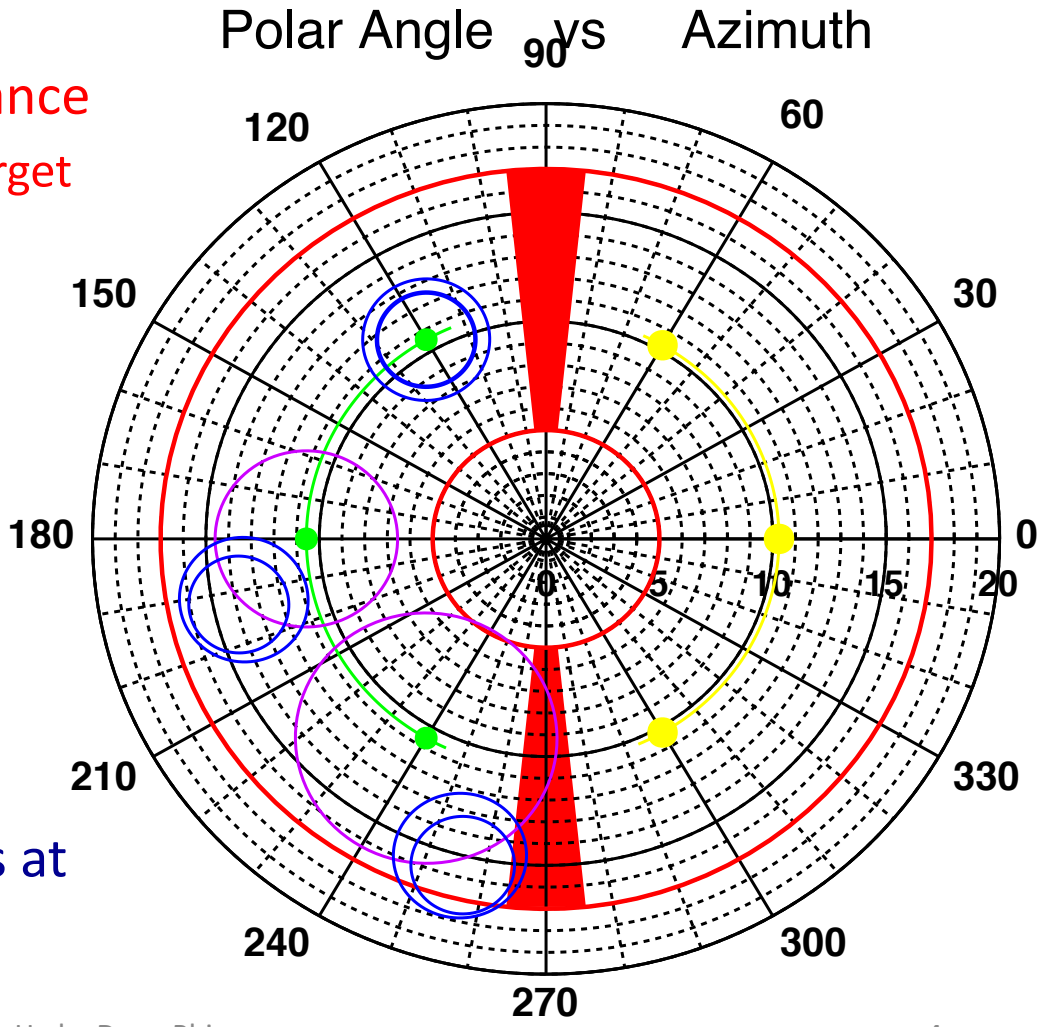
SoLiD × [NH_3-Target] (e,e') Acceptance

- Electron beam = 11 GeV
- A possible window for deep virtual $\vec{H}(e,e'K^+K^-)p$ measurements on a transversely polarized target.



Ptolemaic Picture of $\phi \rightarrow K^+K^-$ Acceptance

- $Q^2 = 2.0$, $x_{Bj} = 0.2$
  - Red = Limits of SoLid Acceptance
    - 10 θ_{MS} Shield of e^+ e^- from target
  - Yellow arc
    = scattered electrons
  - Green 'cycle'
    = Virtual photon direction
  - Violet 'epi-cycle'
    = three examples of ϕ :
    $t_{\gamma,\phi} = t_{Min}$, t_{Min}–0.2 GeV^2,
    t_{Min}–0.4 GeV^2
  - Blue epi-epi-cycles: K^+,K^- arcs at
    $\cos\theta_K^{\phi\text{-rest}} = \pm 0.5$



Ptolemaic Picture of $\phi \rightarrow K^+K^-$ Acceptance

- $Q^2 = 4.0$, $x_{Bj} = 0.4$
  - Red = Limits of SoLid Acceptance
    - 10 θ_{MS} Shield of e^+ e^- from target
  - Yellow arc
    = scattered electrons
  - Green 'cycle'
    = Virtual photon direction
  - Violet 'epi-cycle'
    = three examples of ϕ :
    $t_{\gamma,\phi} = t_{Min}$, t_{Min}–0.2 GeV^2,
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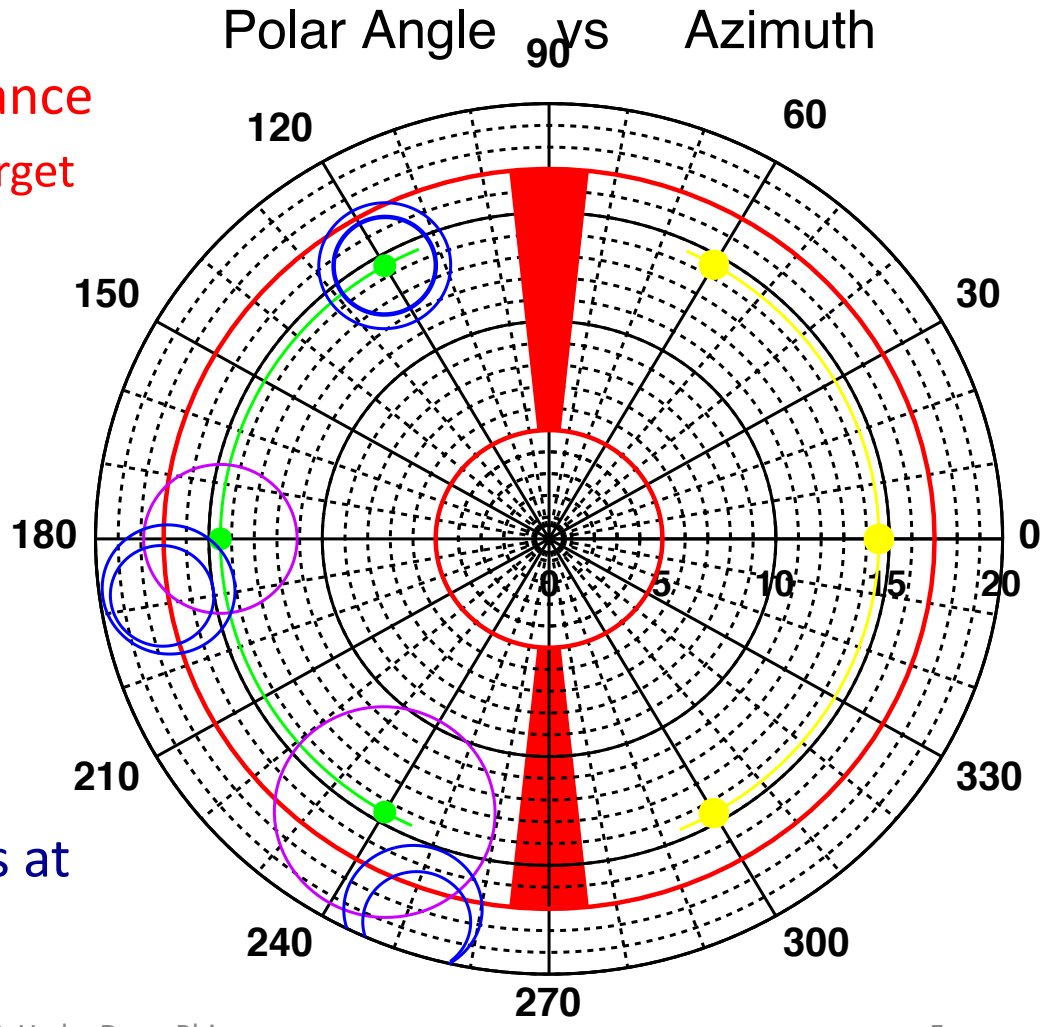

Conclusion

- H and E GPDs are highly constrained by DIS and Elastic Form Factors
  - Most models assume no nodes in either H or E.
  - Testing for Nodes, especially in *E* is critical.
- Even just a few high precision measurements of $E(\xi,\xi,t)$ at variable ξ can have a major impact
  - Models of E
  - Ji Sum Rule
- SoLiD could have a high precision (high transverse polarized luminosity) window on Deep ϕ-production