

NSAC QCD Town Hall
MIT, Cambridge MA
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Opportunities with a 2nd EIC Detector



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Complementarity of Two Detectors

Cross checks and detector synergies

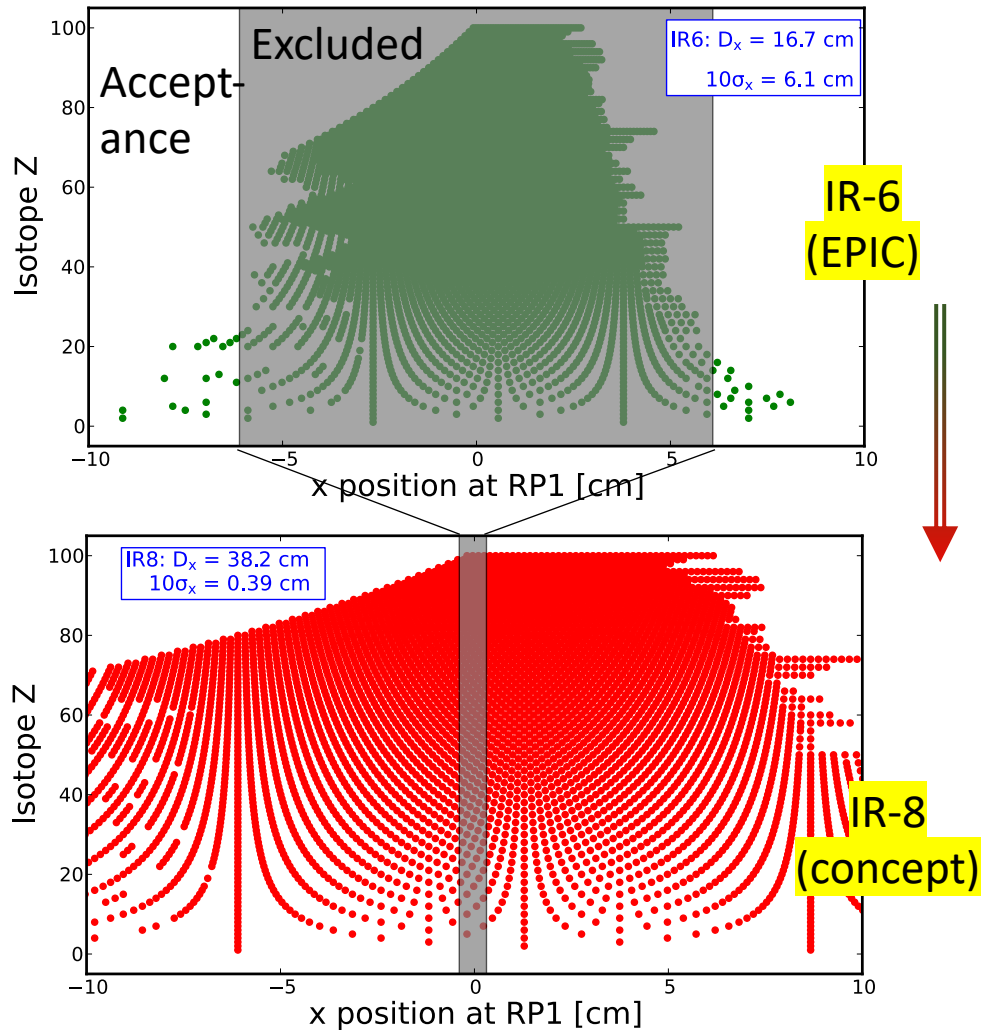
- The second detector should be able to cross-check results from Detector 1, presumably with an emphasis on the common White Paper goals.
- The combined data from Detector 1 and 2 could reduce systematic uncertainties in key channels (cf. H1 and ZEUS).

New opportunities

- The second detector can provide opportunities to carry out measurements that cannot be undertaken with IR6/Detector 1, and to significantly extend the EIC capabilities, for instance as outlined in the DPAP report.
- Some new capabilities could provide direct extensions of the White Paper goals (e.g., studies of the 3D structure of nuclei), while others could be physics beyond the WP (e.g., Beyond Standard Model).

Ion Far-Forward

- Ion Fragments from ^{238}U

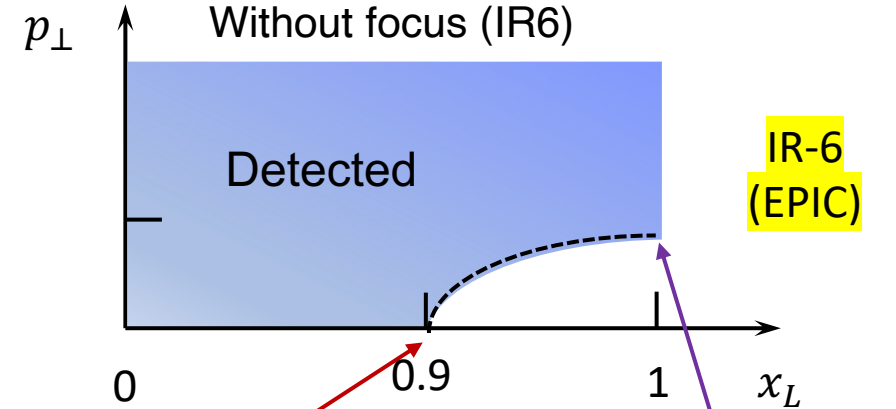


Factor of 10
improvement in
acceptance near
 P_{beam}

← Z' vs $x_{\text{RP}}(\text{cm})$

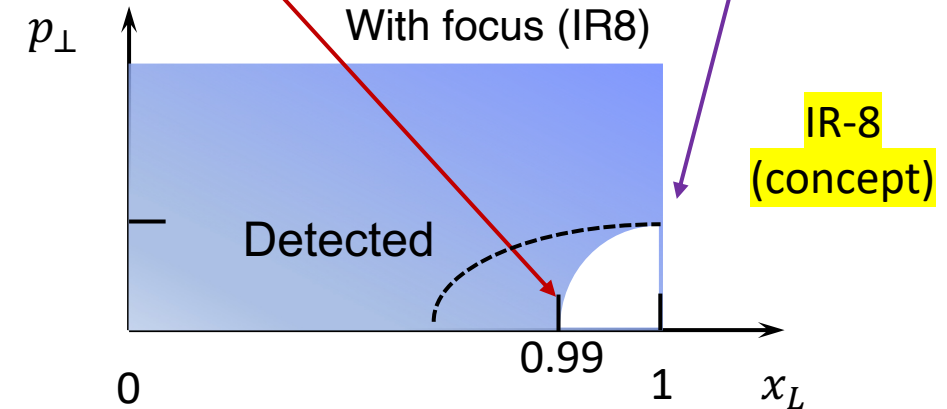
p_{\perp} vs x_L →

- Proton: $x_L = P'/P_{\text{Beam}}$



Limited by D and
2nd focus (β_2)

Limited by angular
acceptance (β^*)



Comments from the EIC Detector Proposal Advisory Panel report (Summarized by R.Fatemi at EICUG Annual Meeting)

- “A strong case for **two complementary general-purpose detectors** has been made during the panel review”
- “...requires a **well-chosen balance between optimization as general-purpose detector versus partial specialization** and the ability to cross check the other detector for a broad range of measurements. The design of a second detector should be chosen with these criteria in mind.”
- “The time required for its design and construction may offer **opportunities for benefiting from technological progress.**”
- “As laid out in the section 2.1 on physics performance, **an IR with a secondary focus can significantly broaden the physics scope and output of the EIC.**”