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## Far Forward Reconstruction Studies of Deep Exclusive Meson Production reactions at the EIC

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One of the unique aspects of the Electron-Ion Collider (EIC) detectors is the extensive integration of the far-forward and far-backward detectors with the EIC ring components. This is based primarily on experience from the only prior electron-proton collider, HERA, where far-forward detector infrastructure was only partially installed initially, and it was difficult to install highly efficient and hermetic detector coverage as the needs of the physics program evolved. In contrast, the ePIC detector is envisaged to have a highly sophisticated Zero Degree Calorimeter (ZDC) far downstream of the interaction region, supplemented with tracking and calorimetry *inside* the first downstream dipole, the B0 detector, and Roman pots. The talk will present a summary of feasibility studies utilizing the  $\pi^+$  and  $K^+$  deep exclusive meson production reactions. These provide well-defined but challenging final states that test the far forward event reconstruction, and shed vital information on the detector requirements needed to deliver the physics program. The  $p(e, e' \pi^+ n)$  reaction reconstruction is relatively straightforward, but the  $K^+$  reactions are particularly challenging, as they involve the reconstruction of both 4 and 5 final particle states,  $p(e, e' K^+) \Lambda / \Sigma^0$ , where the hyperon decays into the far forward detectors via  $\Lambda(\Sigma^0) \rightarrow p\pi^- (p\pi^- \gamma)$  or  $\Lambda(\Sigma^0) \rightarrow n\pi^0 (n\pi^0 \gamma)$ .

### Keyword-1

Electron Ion Collider

### Keyword-2

electron scattering

### Keyword-3

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