

# DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 281

Type: **Parallel talk**

## Precision Electroweak Measurements and Beyond the Standard Model Searches at the Electron-Ion Collider

*Thursday 30 March 2023 15:00 (20 minutes)*

The EIC's high luminosity, wide kinematic coverage, availability of proton and isoscalar deuteron targets, and ability to polarize both the lepton and hadron beams, allows for unique opportunities for precision tests of the electroweak sector of the Standard Model and constraining beyond the Standard Model physics in a manner that complements efforts at the LHC and low energy experiments. In particular, neutral current parity violating DIS allows for a precision extraction of the weak mixing angle over the previously unexplored range of  $10 \text{ GeV} < Q < 70 \text{ GeV}$  and can directly constrain the parameter space of dark photon and dark-Z models. Furthermore, the various PVDIS asymmetries at the EIC can constrain new physics using the model-independent techniques such as Standard Model Effective Theory (SMEFT) analysis. The EIC will also search for the charged lepton flavor violating DIS process  $ep \rightarrow \tau X$ , with the possibility of improving current limits by more than an order of magnitude. In this talk, we will present an overview of these different topics and provide projection results based on recently carried out realistic EIC simulation studies.

### Submitted on behalf of a Collaboration?

No

### Participate in poster competition?

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**Session Classification:** WG6

**Track Classification:** WG3: Electroweak Physics and Beyond the Standard Model