# PVDIS "Final" Results

# Electron
# PVDIS

# Summary

**Data:** Electron PVDIS, proton + deuteron targets

**Luminosity:** 100 fb-1 each for proton and deuteron
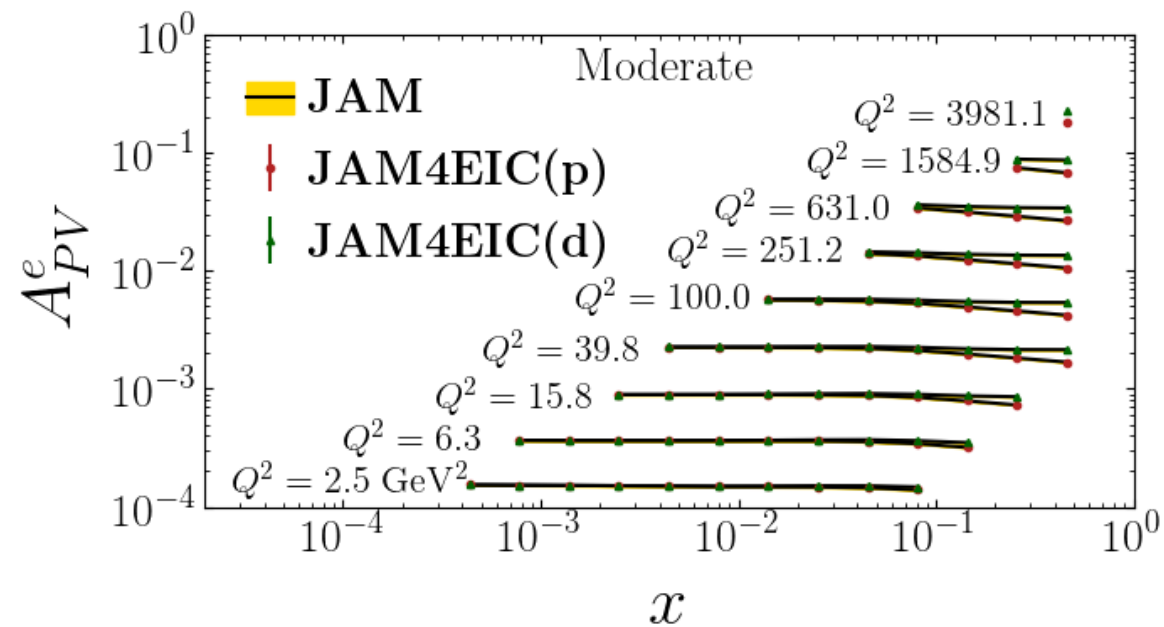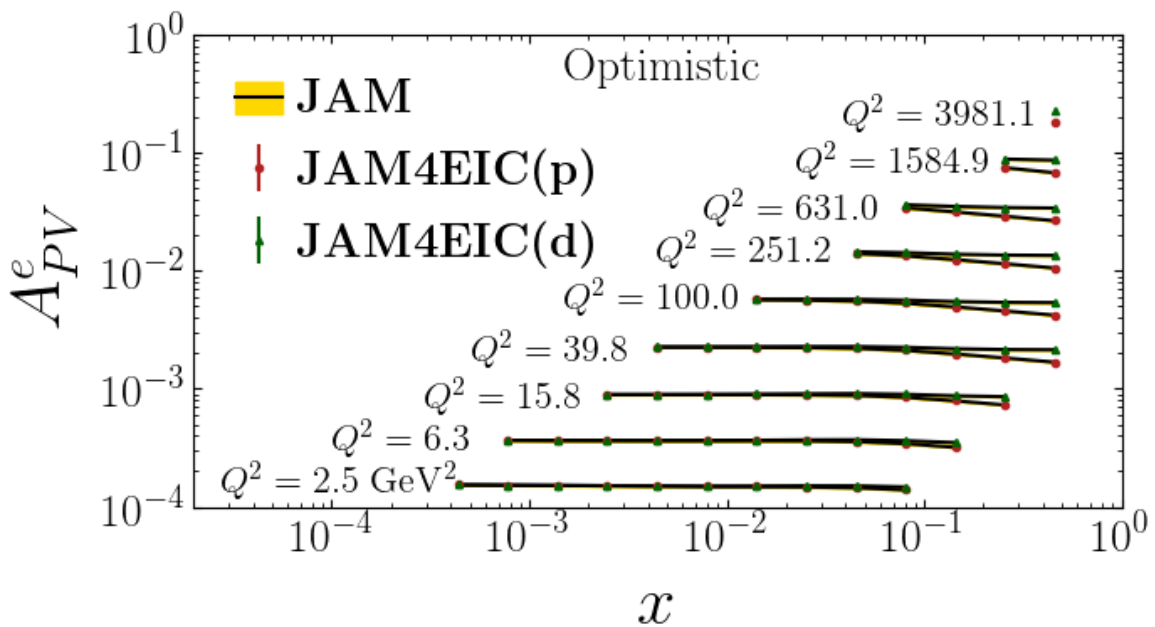
**Polarization:** $P = 0.7, \delta P = 0.007$

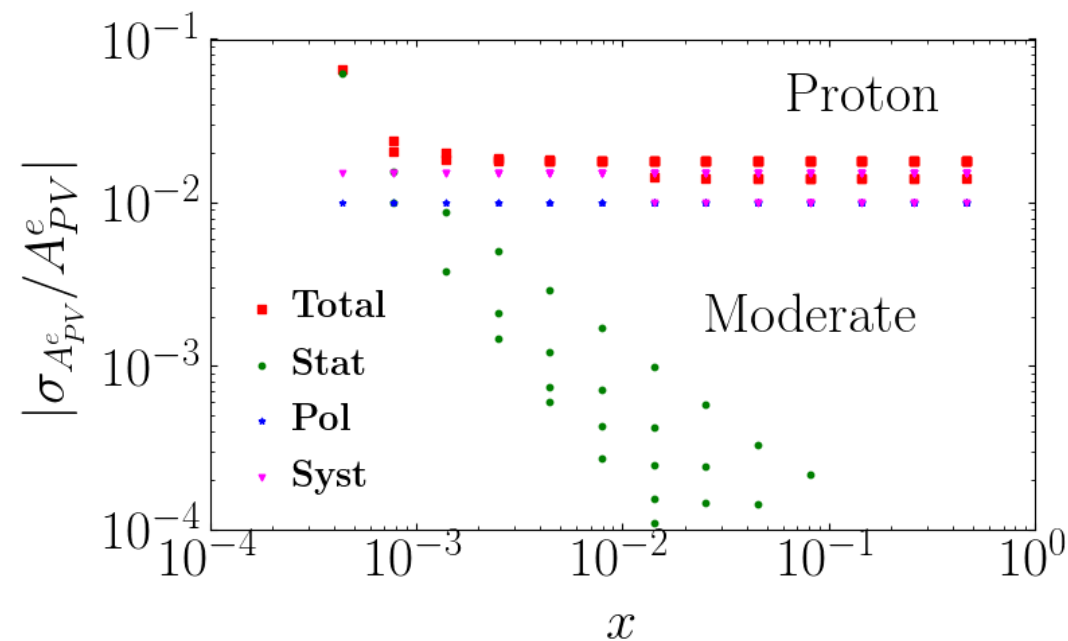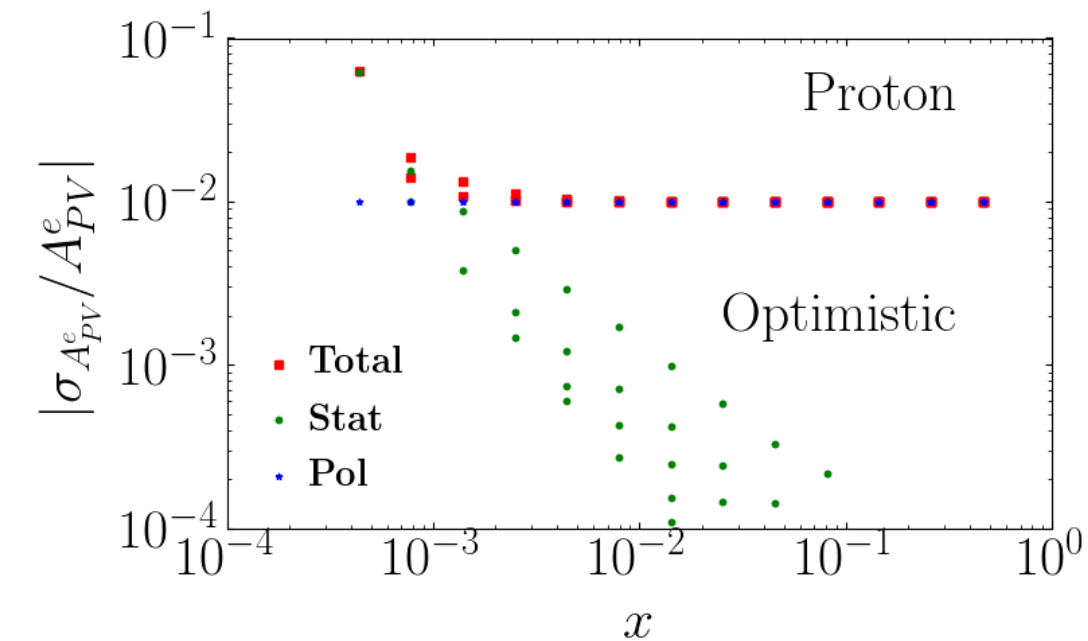**Further systematic errors:**
**Optimistic:** No further errors
**Moderate:** 1% for y < 0.01, 1.5% for y > 0.01
**Pessimistic:** ???

**Asymmetry**

# Errors (proton)



Proton

Optimistic

- ■ Total
- ● Stat
- ★ Pol



Proton

Moderate

- ■ Total
- ● Stat
- ★ Pol
- ▼ Syst

*(Pessimistic goes here)*



10 GeV x 100 GeV

Proton                    500 fb-1
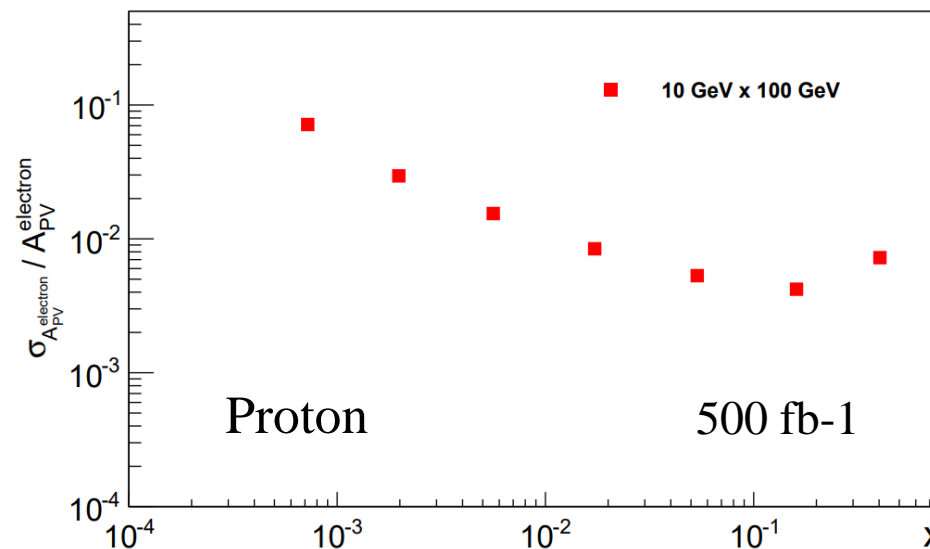
(Y.X. Zhao, A. Deshpande, J. Huang, K. S. Kumar, S. Riordan, Eur. Phys. J. A (2017) 53: 55)
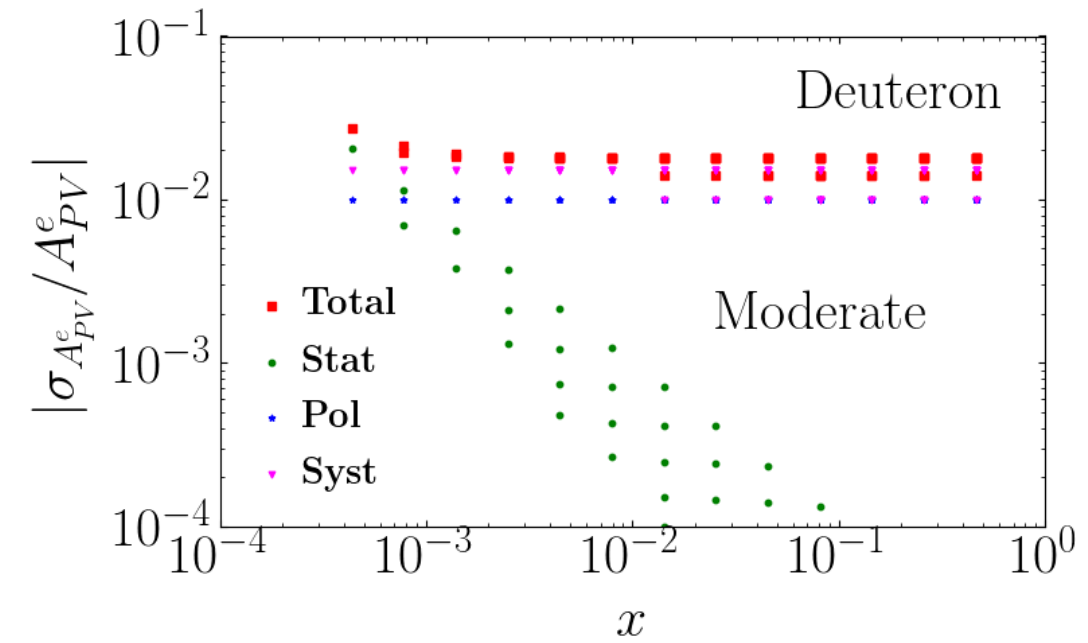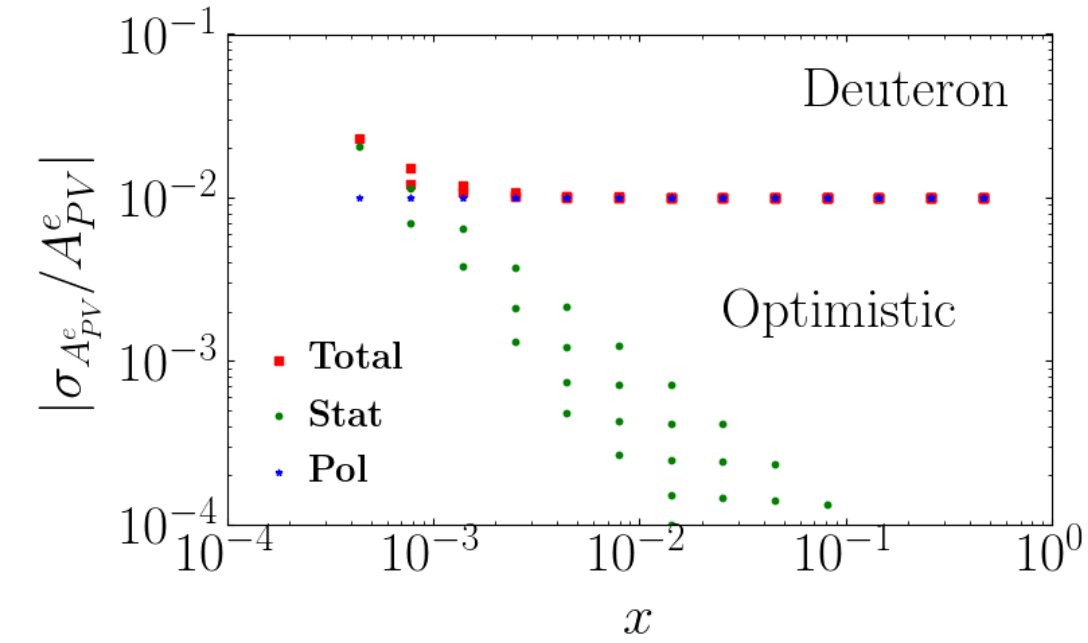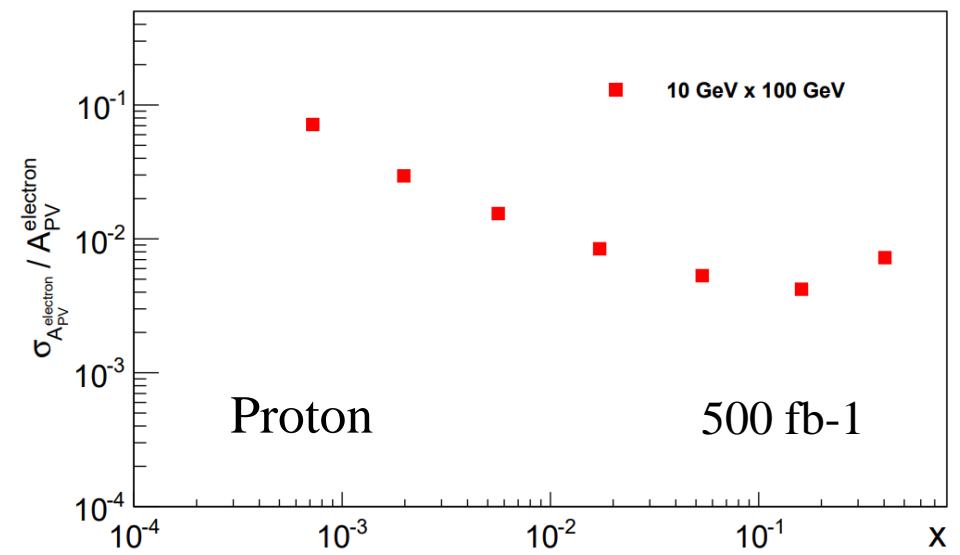
# Errors (deuteron)



*(Pessimistic goes here)*

(Y.X. Zhao, A. Deshpande, J. Huang, K. S. Kumar, S. Riordan,
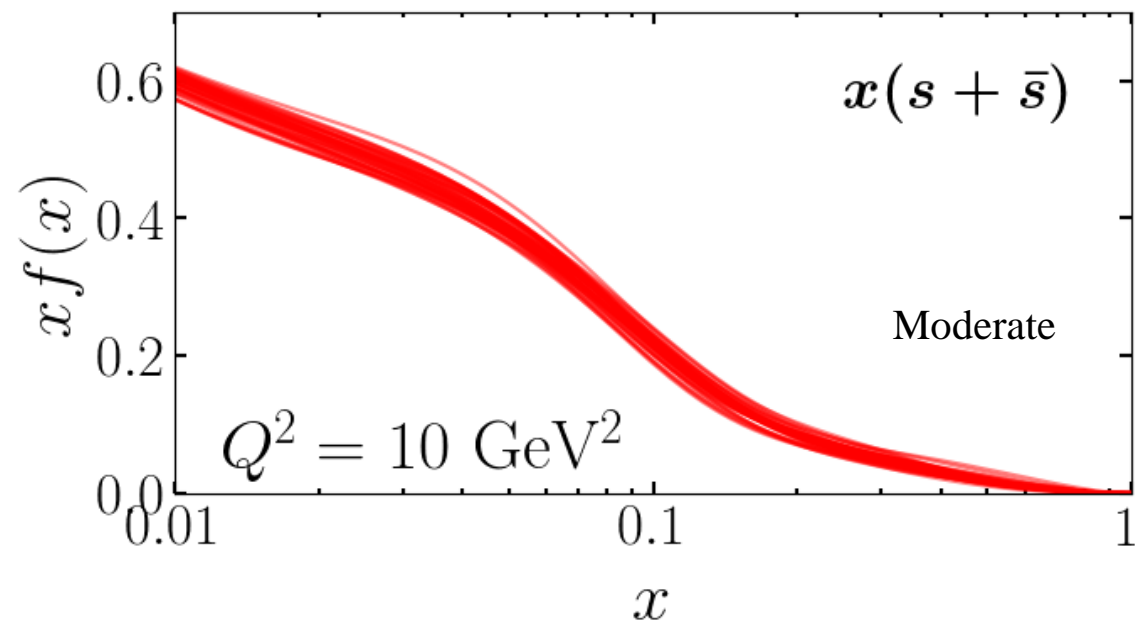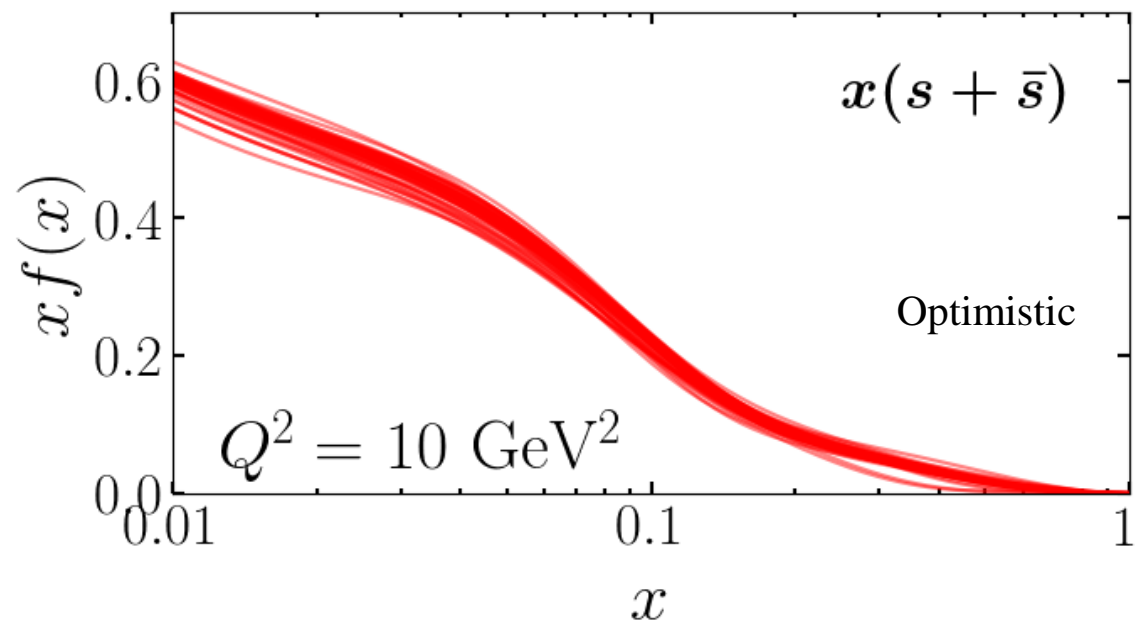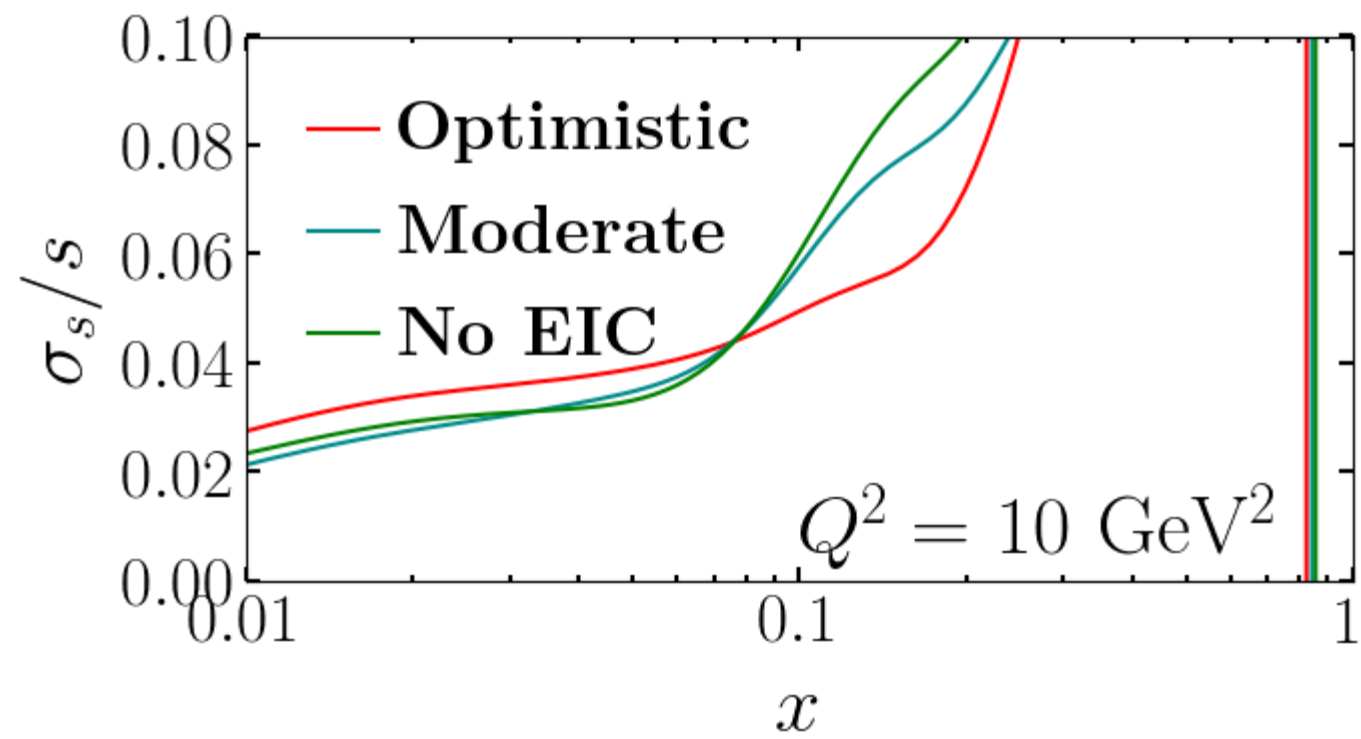Eur. Phys. J. A (2017) 53: 55)

# Strange Distribution



**Optimistic** panel: $x(s + \bar{s})$, $Q^2 = 10 \text{ GeV}^2$

**Moderate** panel: $x(s + \bar{s})$, $Q^2 = 10 \text{ GeV}^2$

*(Pessimistic goes here)*

**No EIC** panel: $x(s + \bar{s})$, $Q^2 = 10 \text{ GeV}^2$
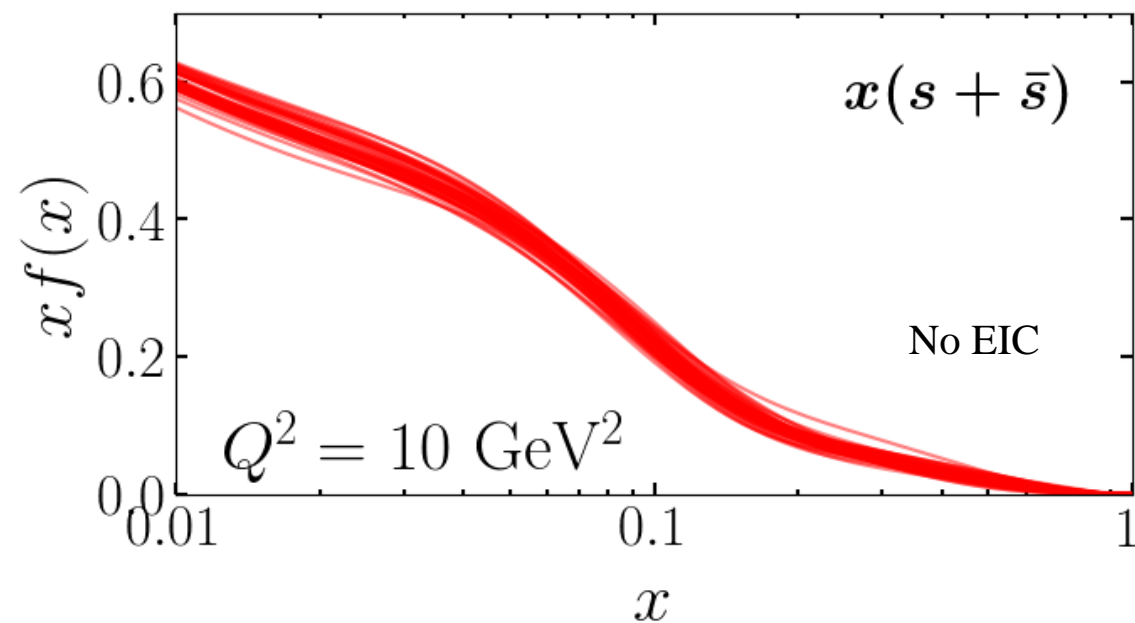
**Strange Standard Deviation**

# Weak Mixing Angle



Optimistic — EIC



Moderate — EIC
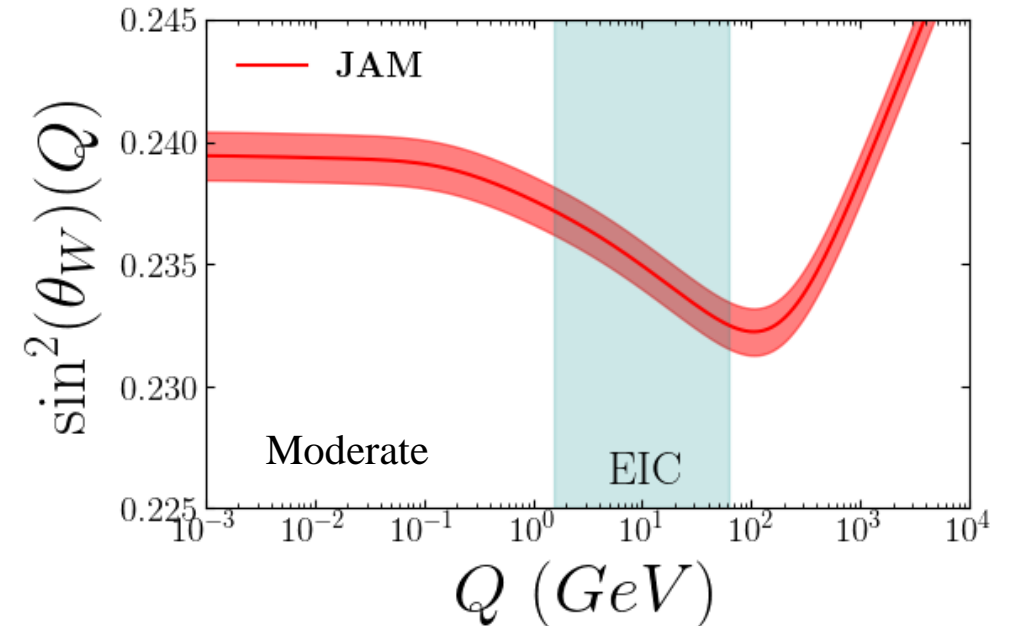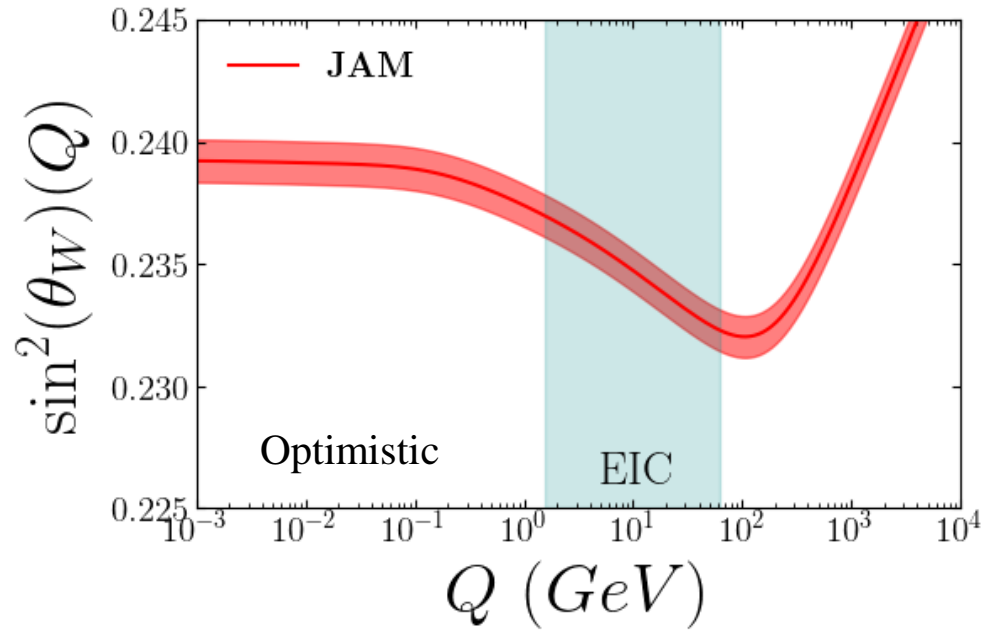
*(Pessimistic goes here)*
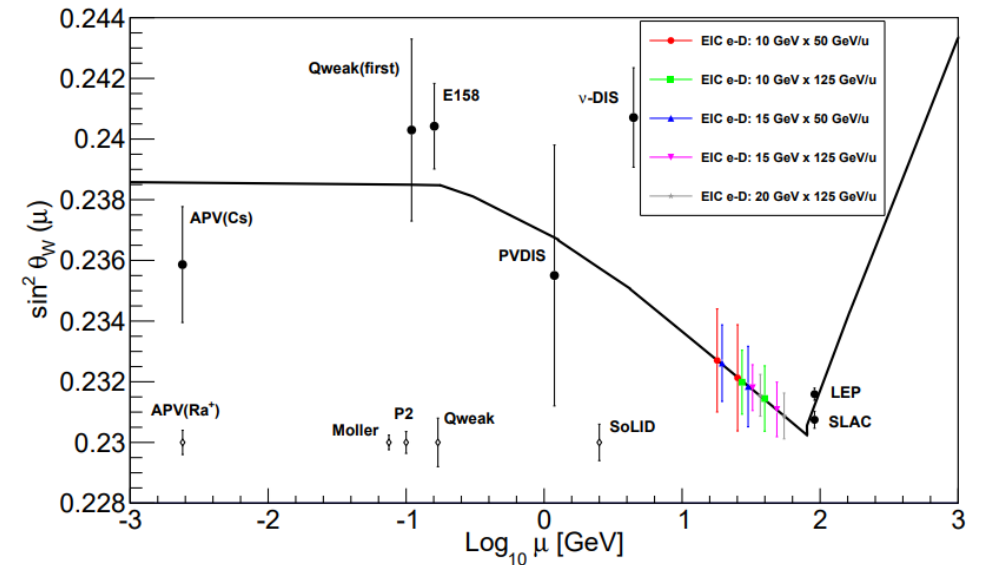


(Y.X. Zhao, A. Deshpande, J. Huang, K. S. Kumar, S. Riordan,
Eur. Phys. J. A (2017) 53: 55)

# Hadron

# PVDIS

# Summary

**Data:** Hadron PVDIS, proton target only
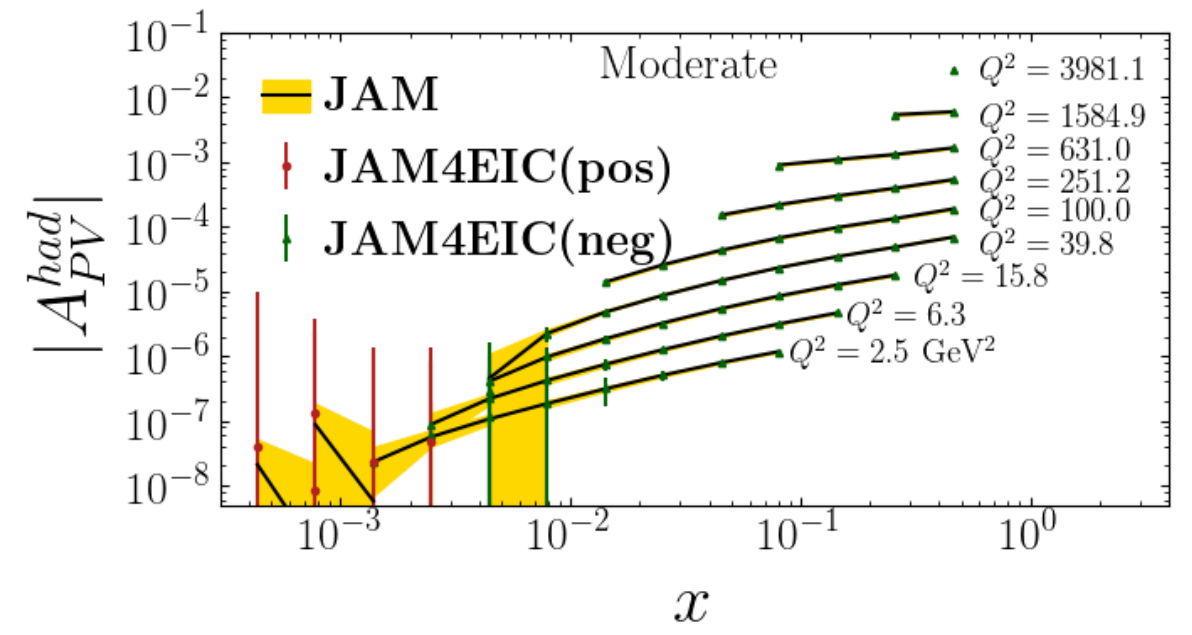
**Luminosity:** 100 fb-1

**Polarization:** $P = 0.7, \delta P = 0.007$
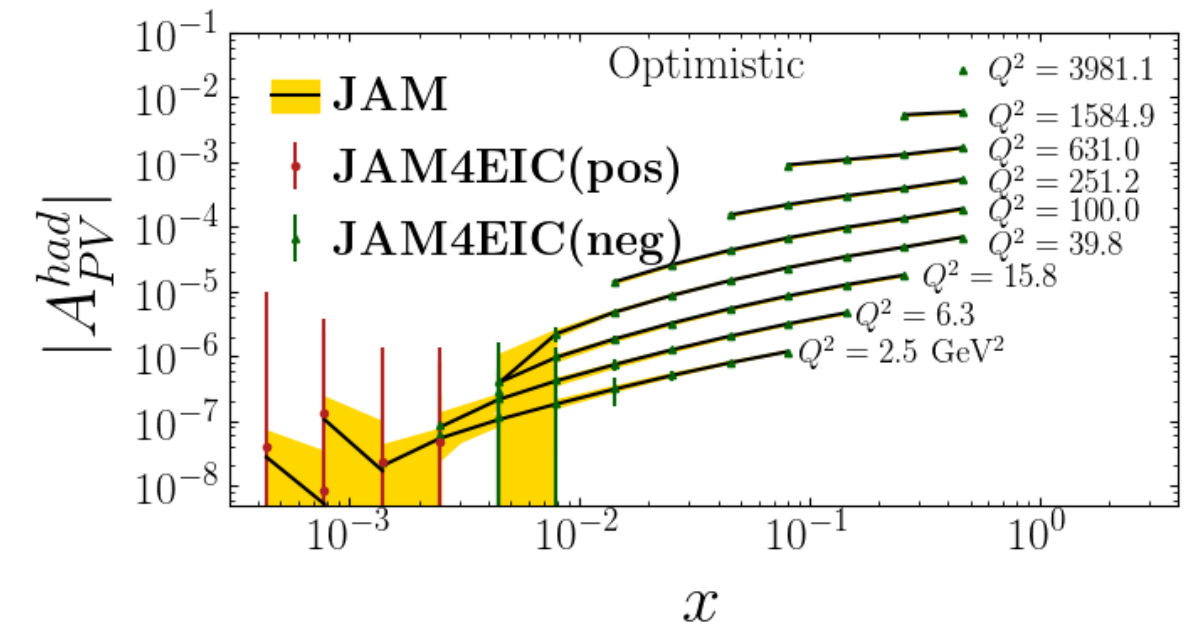
**<u>Further systematic errors:</u>**
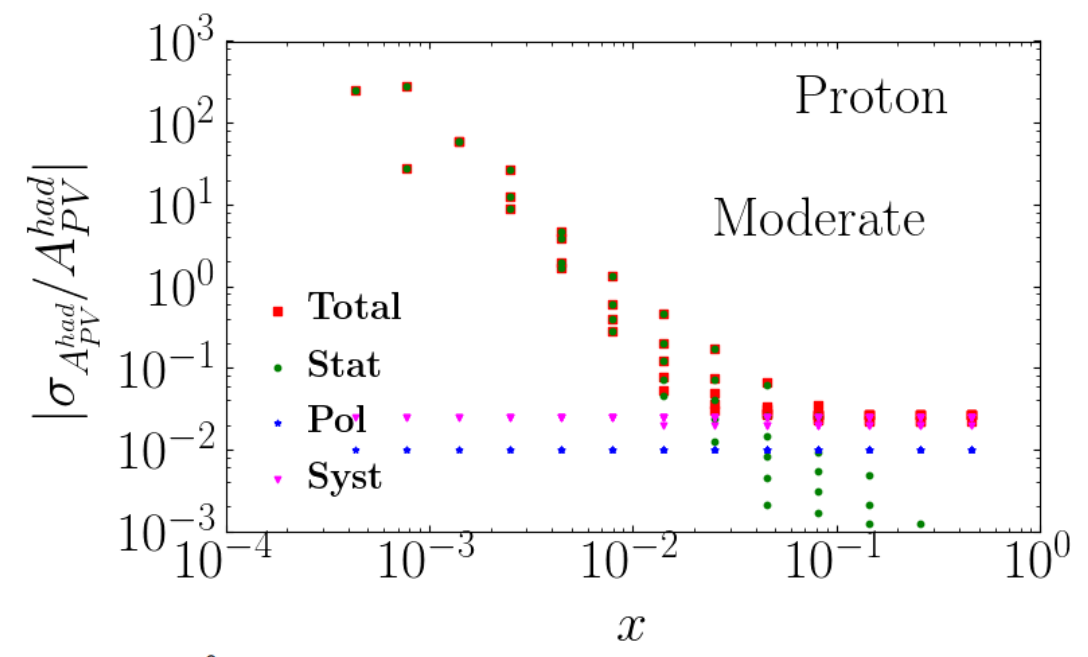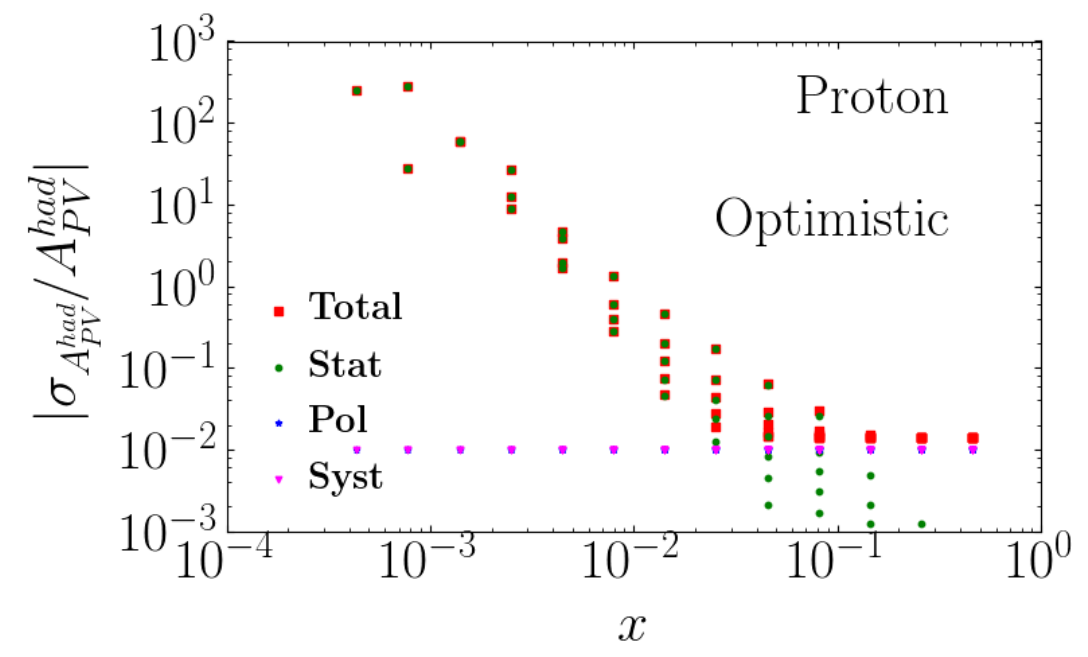**Optimistic:** Flat 1%
**Moderate:** 2% for y < 0.01, 2.5% for y > 0.01 (In progress)
**Pessimistic:** ???

# Asymmetry

# Errors



Proton

Optimistic

$|\sigma_{A_{PV}^{had}} / A_{PV}^{had}|$

- **Total**
- **Stat**
- **Pol**
- **Syst**

*(Pessimistic goes here)*



Proton

Moderate

$|\sigma_{A_{PV}^{had}} / A_{PV}^{had}|$

- **Total**
- **Stat**
- **Pol**
- **Syst**



10 GeV x 100 GeV

500 fb-1

Proton

$\sigma_{A_{PV}^{proton}} / A_{PV}^{proton}$
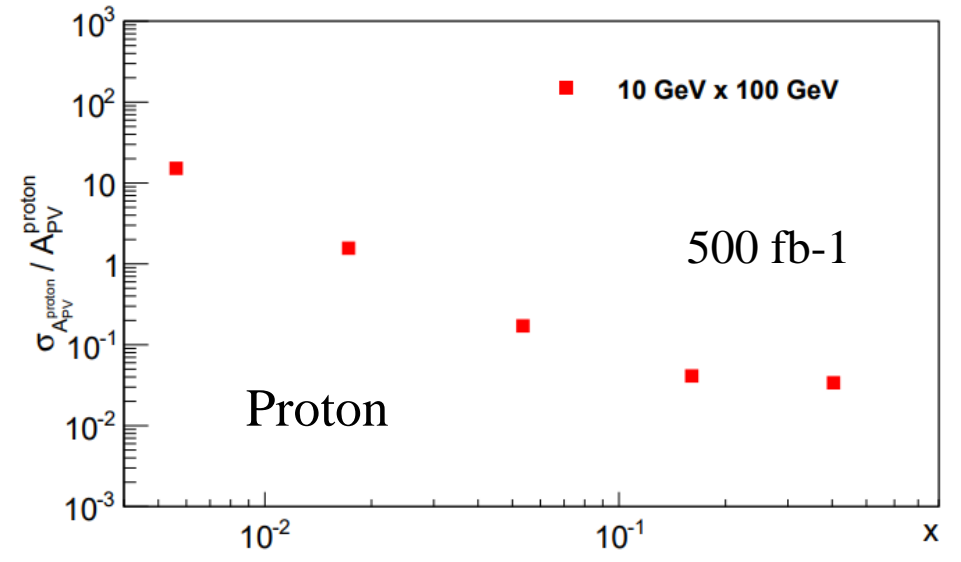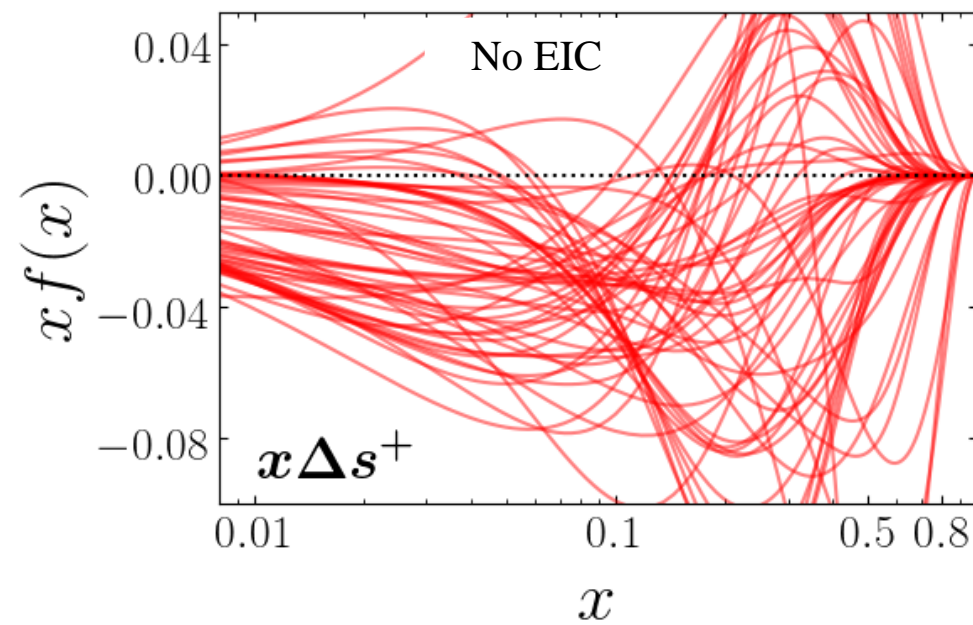
(Y.X. Zhao, A. Deshpande, J. Huang, K. S. Kumar, S. Riordan, Eur. Phys. J. A (2017) 53: 55)

**Strange (Q² = 10)**

**Strange Standard Deviation (Q² = 10)**