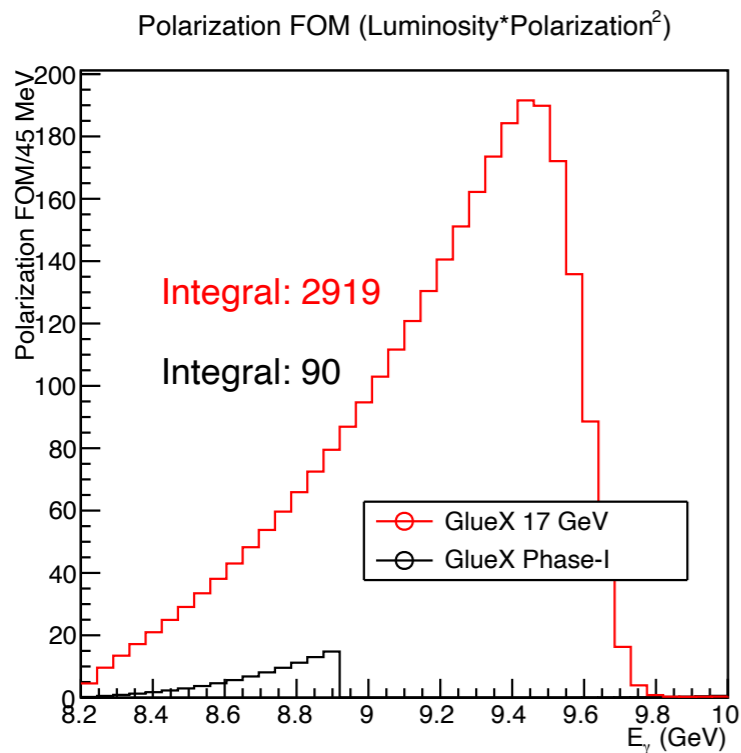
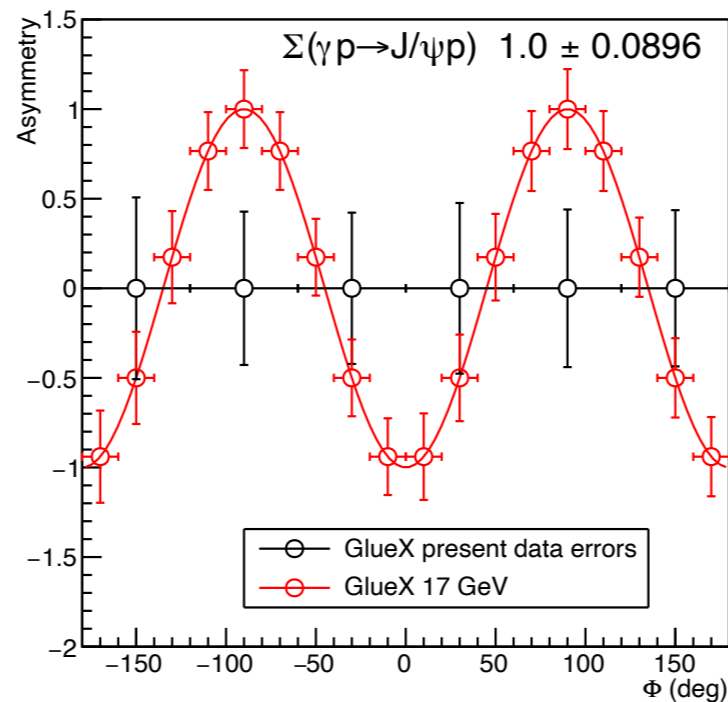


# J/ψ SDMEs at 17 GeV with GlueX

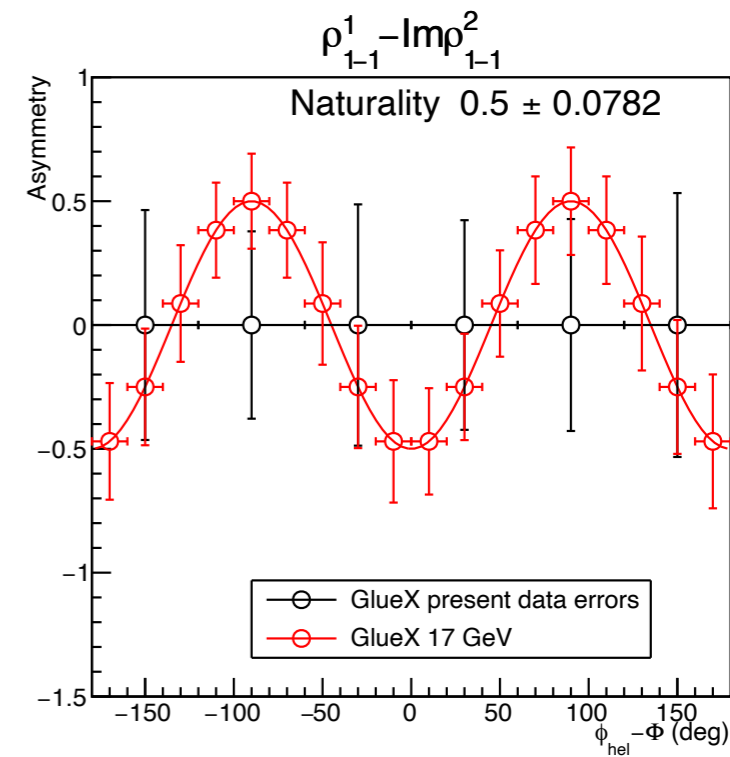
## Polarized measurements



## Beam Asymmetry

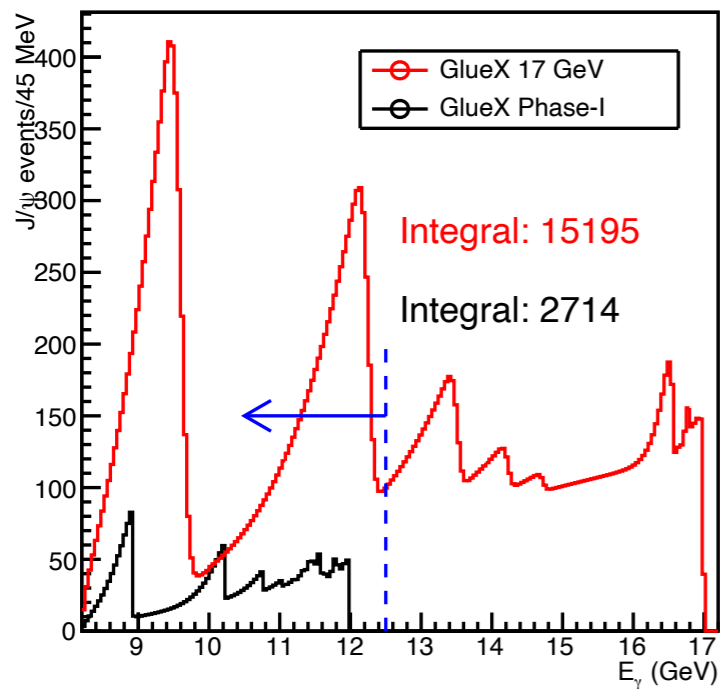


## Naturality of t-channel exchanged particle

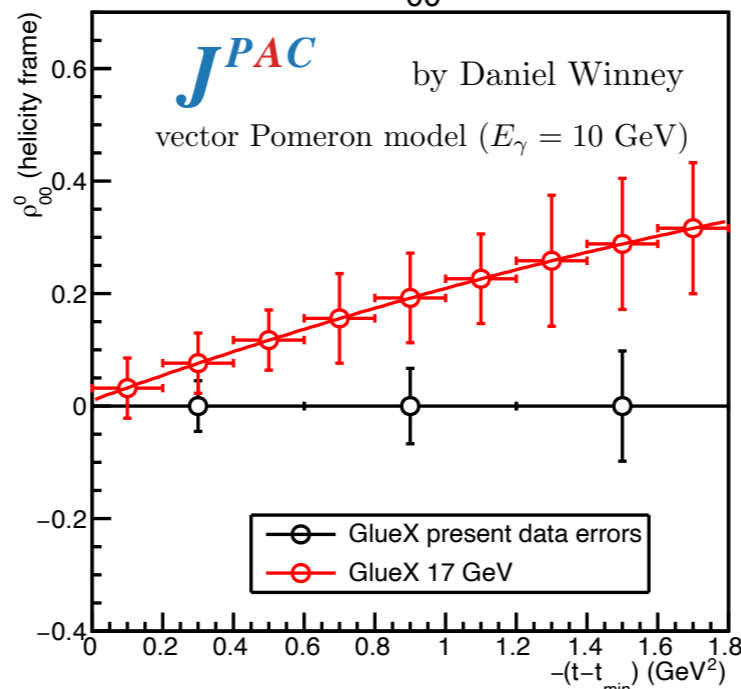


## Unpolarized decay asymmetries

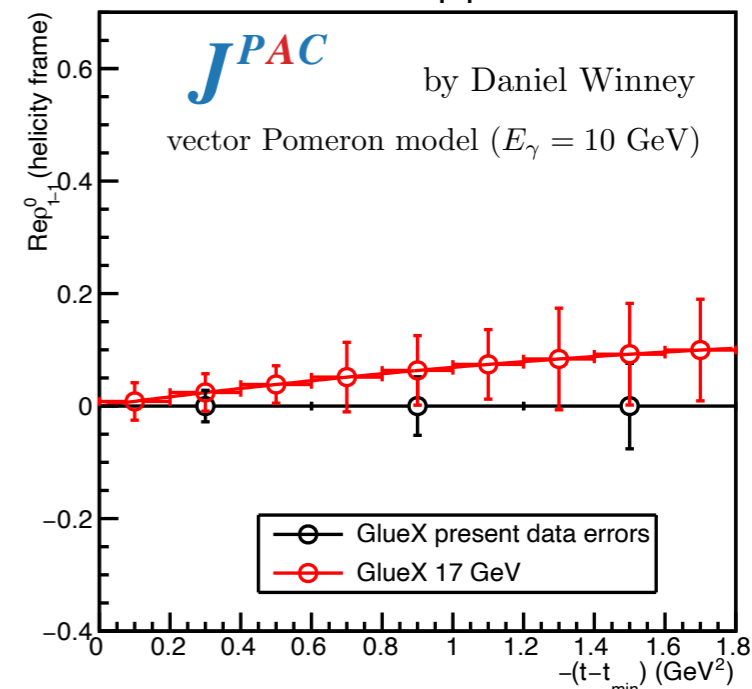
### Expected Yield



### $\rho_{00}^0$



### $\text{Re}\rho_{1-1}^0$



**Non-zero values mean the helicity is not conserved.**

# Backup

## Polarized measurements

$$\text{Asymmetry for } \Sigma = \frac{1}{P_\gamma} \frac{Y^{0^\circ}(\Phi) - Y^{90^\circ}(\Phi)}{Y^{0^\circ}(\Phi) + Y^{90^\circ}(\Phi)} = -\Sigma \cos 2\Phi$$

$$\text{Asymmetry for Naturality} = \frac{1}{P_\gamma} \frac{Y^{0^\circ}(\phi - \Phi) - Y^{90^\circ}(\phi - \Phi)}{Y^{0^\circ}(\phi - \Phi) + Y^{90^\circ}(\phi - \Phi)} = -\frac{\rho_{1-1}^1 - \text{Im}\rho_{1-1}^2}{2} \cos 2(\phi - \Phi)$$

**+0.5 .. natural exchange**

**-0.5 .. unnatural exchange**

## Unpolarized decay asymmetries

$$W(\cos \theta) = \frac{3}{8} (1 + \rho_{00}^0 + (1 - \rho_{00}^0) \cos^2 \theta)$$

$$W(\phi) = \frac{1}{2\pi} (1 + \text{Re}\rho_{1-1}^0 \cos 2\phi)$$

**0 .. helicity is conserved**