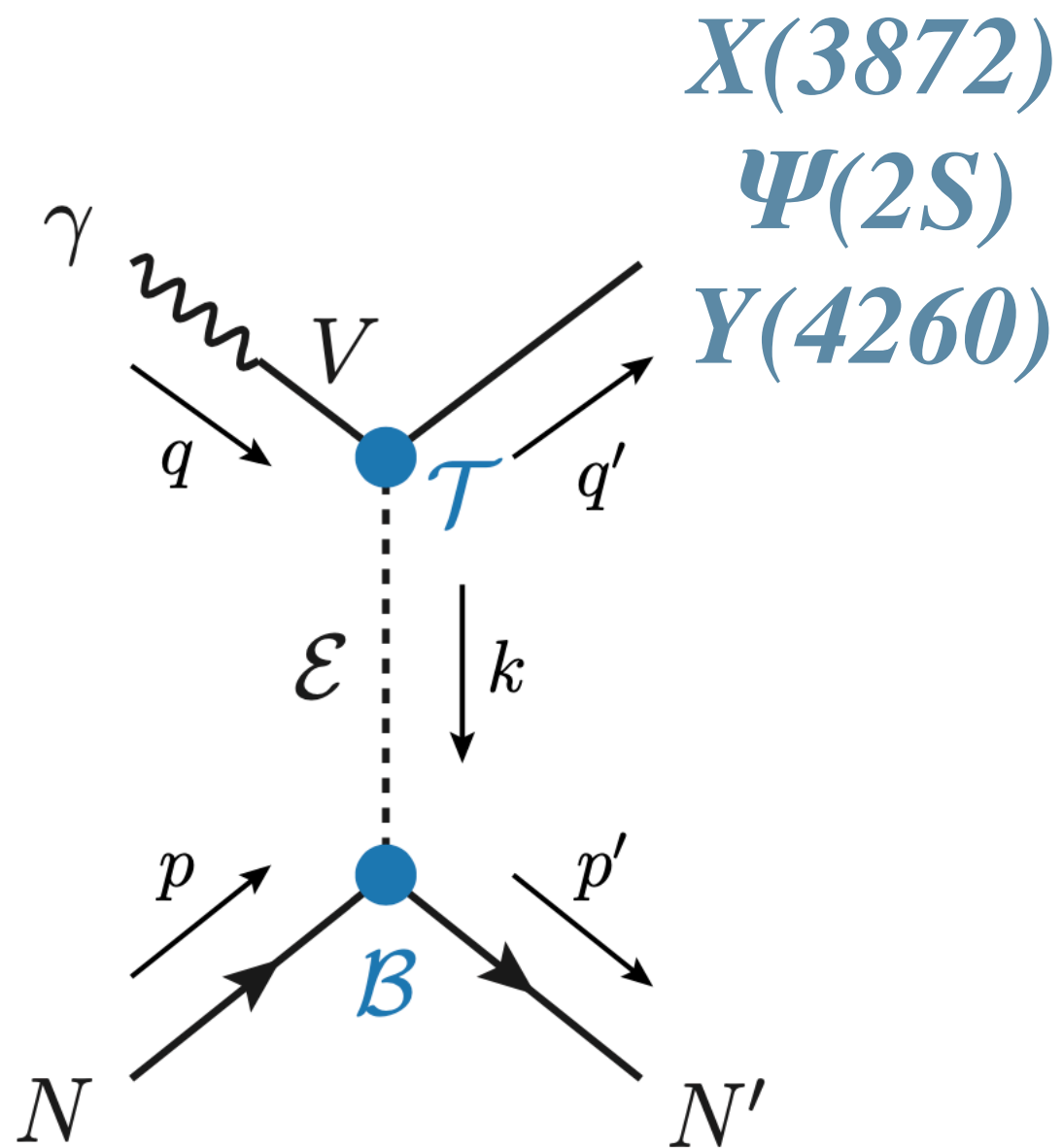# Spectroscopy Update: $J/\psi\pi^+\pi^-$

Justin Stevens & Derek Glazier
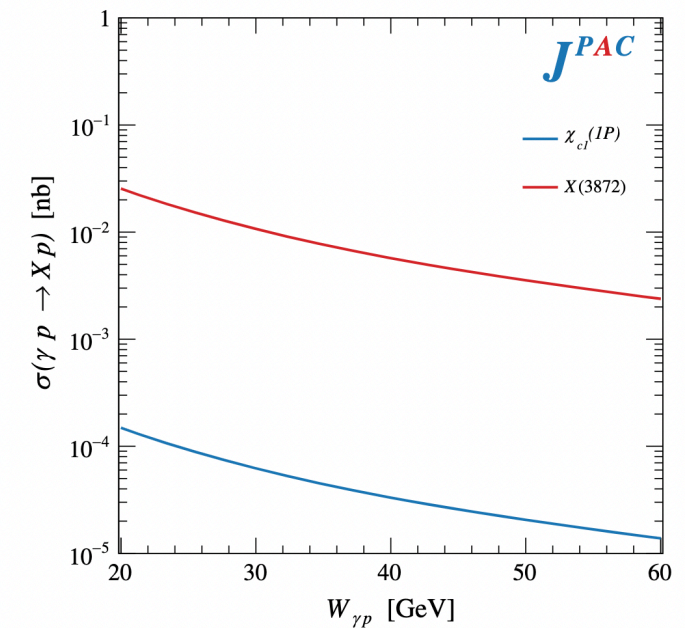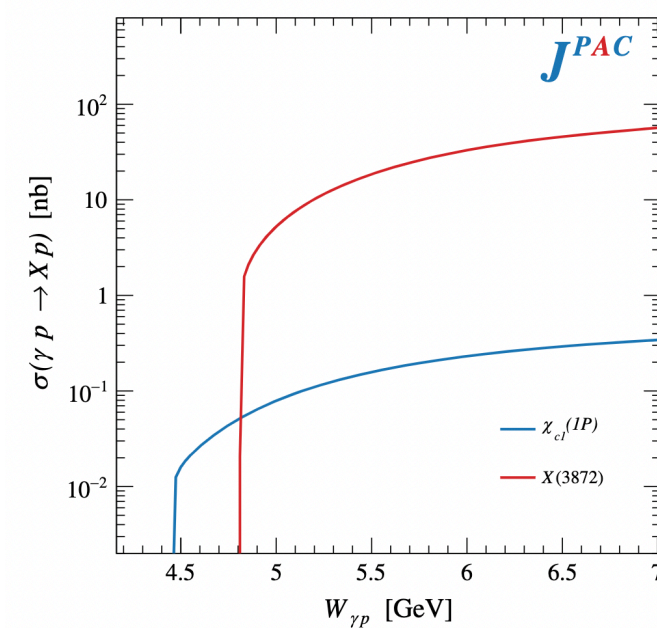**for EIC Spectroscopy WG (proposal independent)**

Model for X and Y → $J/\psi\pi^+\pi^-$
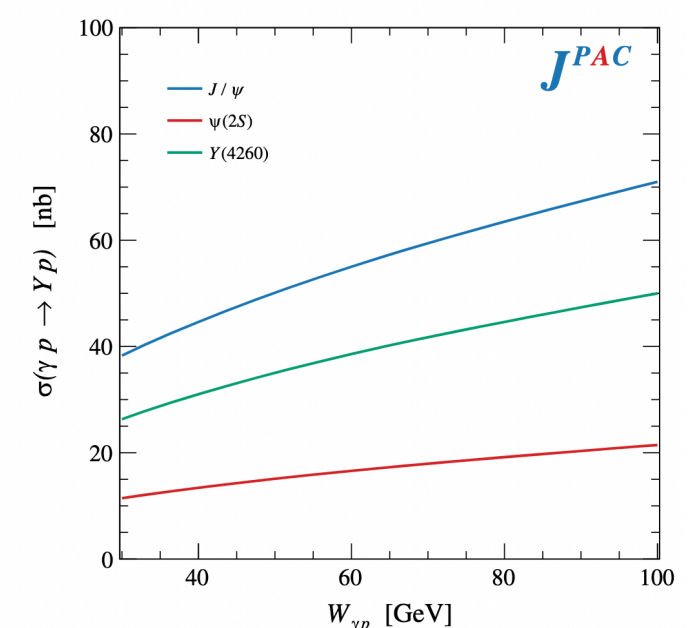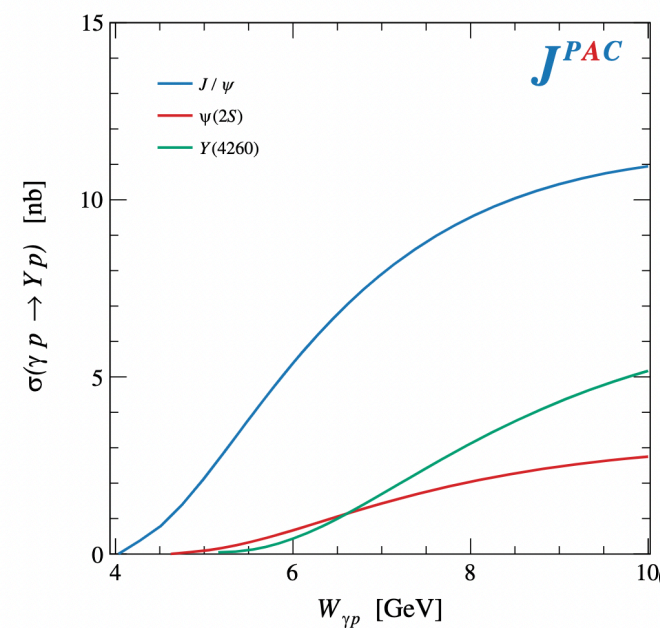
$X(3872)$
$\Psi(2S)$
$Y(4260)$

$X(3872)$

JPAC: PRD 102, 114010

Vector States

Derek Glazier

Factorise 2 photon vertices

Virtual photon flux
+ form factor

JPAC photoproduction
amplitudes

e^-

γ^*

XYZ

e^-

R, P

p

p, n
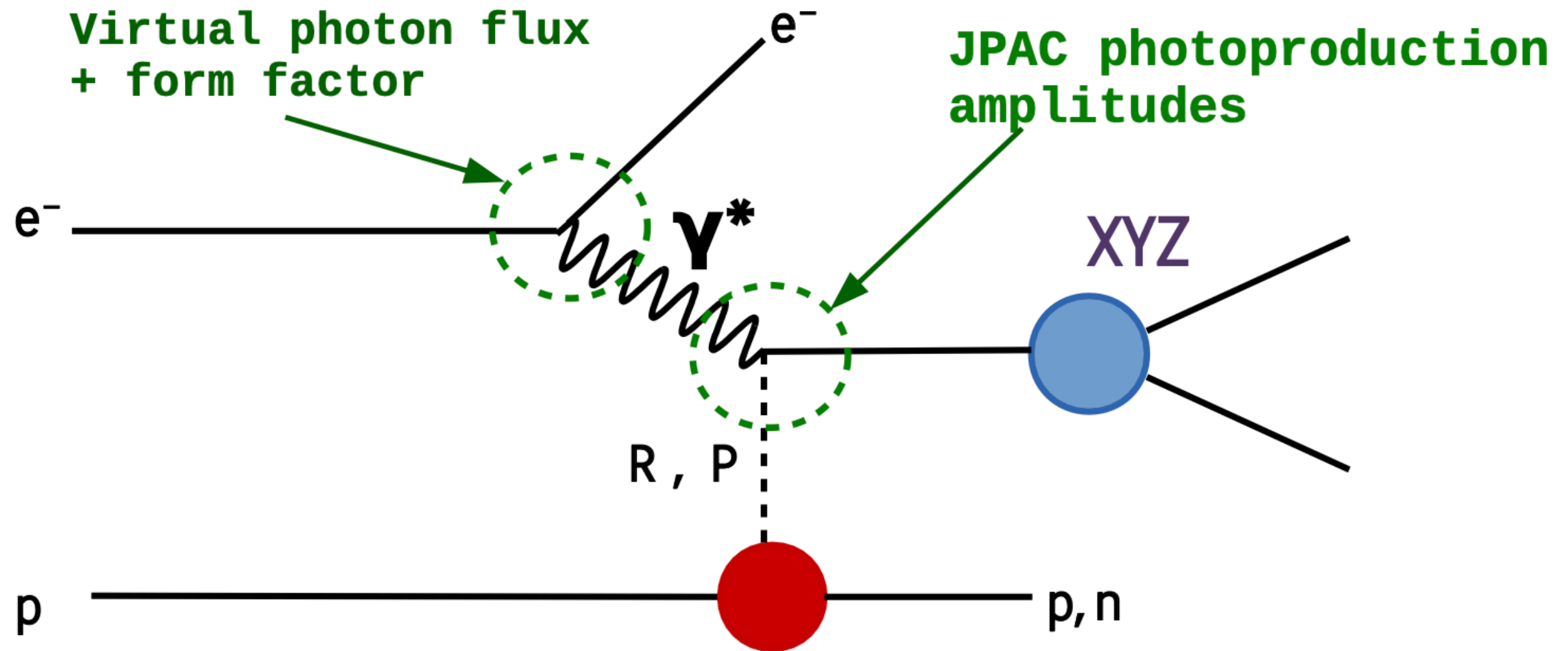
Generator available on GitHub: https://github.com/dglazier/elSpectro

Initial test sample

✳ X(3872) → $J/\psi\pi^+\pi^-$ with 5 x 100 GeV beams run through full simulation

✳ Followed instructions for <u>Tutorial Part 5</u> to make a few e+e- invariant mass plots

✳ Reasonably good correlation between generated and reconstructed mass

   ✳ But, long radiative tail for $J/\psi \to e^+e^-$ due to old detector model (per Sylvester)

✳ Initial sample was deleted. **New samples** (today) may be missing reconstruction(?):

   ✳ https://dtn01.sdcc.bnl.gov:9000/minio/eictest/ATHENA/RECO/acadia-v1.0-alpha/SPECTROSCOPY/