Physics Opportunities with Heavy Quarkonia at the EIC

Heavy quarkonia: Physics

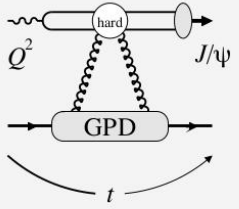
Lots of topics
Lots of opportunities

Heavy quarkonia structure

- Multiscale systems
- Small size on hadronic scale ↔ QCD
- Unique probe of gluodynamics
- Theoretical approaches: LQCD, QCD sum rules, instantons, holograph

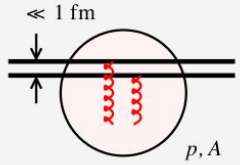
Heavy quarkonia production

- QCD factorization
- Processes: Inclusive and exclusive, pp/AA vs ep/eA, small-x vs near-theshold
- HQ structure: Wave functions, LDMEs, universality
- Open questions



Probe of initial-state gluons

- Color dipole probes gluon field
- Nucleon: Gluon PDFs, GPDs ↔ form factor, local gluon operators ↔ EM tensor
- Nuclei: Shadowing, diffraction, saturation



Probe of final-state medium

- Heavy-ion collisions: Hot medium, QGP
- Extensively studied in theory experiment

Heavy quarkonia spectroscopy

- XYZ states: Challenge conventional understanding
- Open questions: Universality, channel couplings ↔ decays, near-threshold effects
- Future: Move from spectroscopy to structure

Thank you to our sponsors

... and on behalf of the organizers

Jin Huang, Xuan Li, Ivan Vitev Christian Weiss, Fred Olness

Thank you to our participants