

Gluon saturation at small x & shadowing in nuclei

RHIC allows study of transition. LHC always saturated (except very high p_T and $y < -3$)

LHC only 1-month/yr shared between pp, pA and AA - earliest pA 2010?

polarized and diffractive pA are useful - need theoretical calculations.

Models:

- gluon saturation, CGC
- leading twist shadowing (coherence)
- mass renorm. (Vitev)
- Sudakov suppr. (Kopeliovich)
- limiting fragmentation

Also important for AA initial state

Especially for LHC where always saturated at midrapidity

How to distinguish??

- correlations
- energy, rapidity dependence
- universality

need hard processes sensitive to gluons

Forward hadrons

- need forw. $\pi^0 \rightarrow$ STAR FMS
- hadron PID for $|y| > 1$

compare open & closed

Heavy-quarks (c,b) & bound states

need cleaner way to get open-c, -b

vertex detectors!

wide kinematic range to understand physics & differentiate models

separating D & B in single-lepton spectra?
• use $B \rightarrow J/\psi X$ measurement
• very high statistics could allow seeing 2 $c\tau$'s

$D \rightarrow K\pi$ nice but difficult!

Direct photons for $|y| > 1 \rightarrow$ PHENIX NCC

Onia - rare processes

- PHENIX onia
- Need STAR forward $J/\psi \rightarrow ee$

High Luminosities needed!