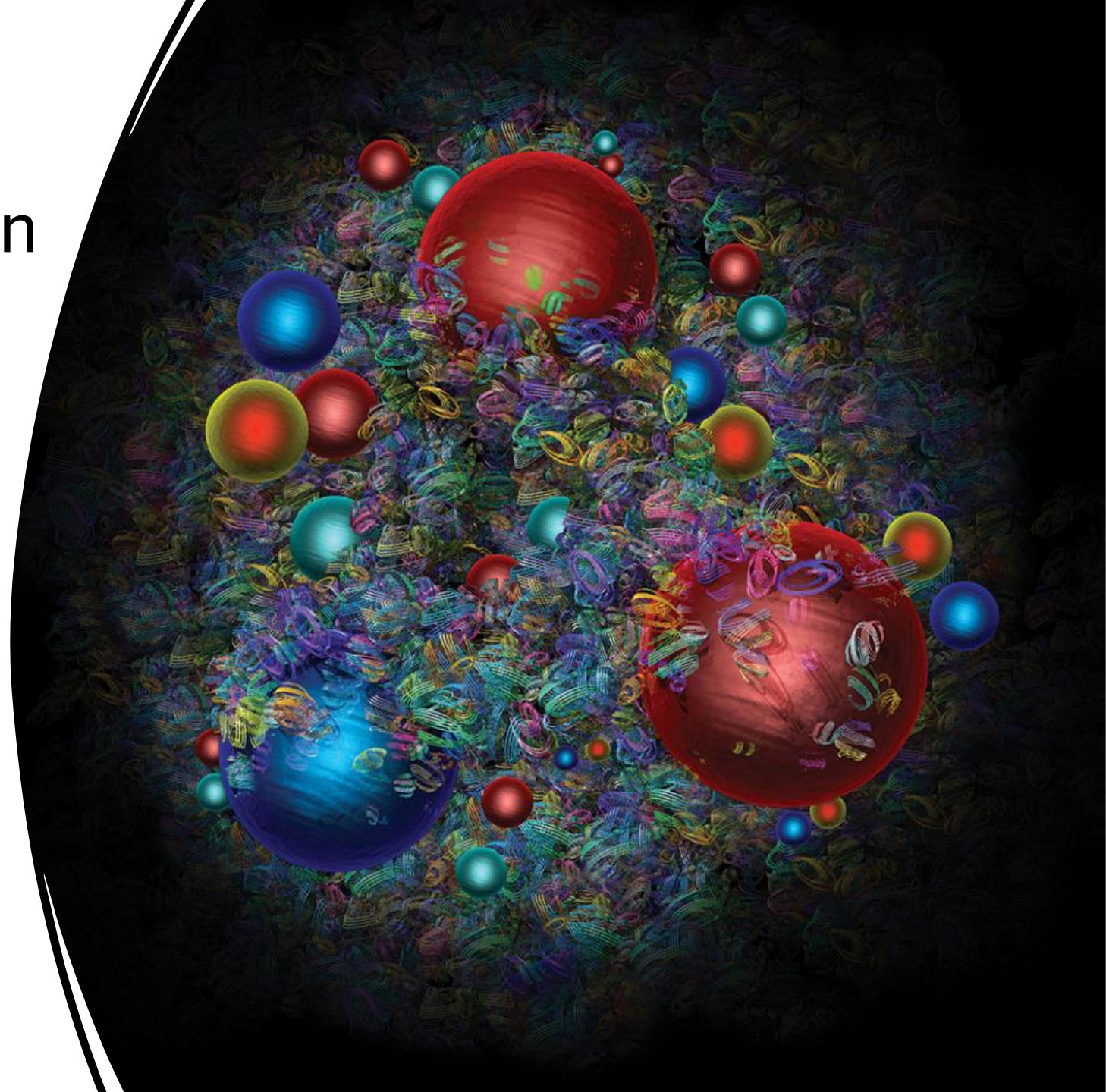
Quantum entanglement in high energy collisions (?)

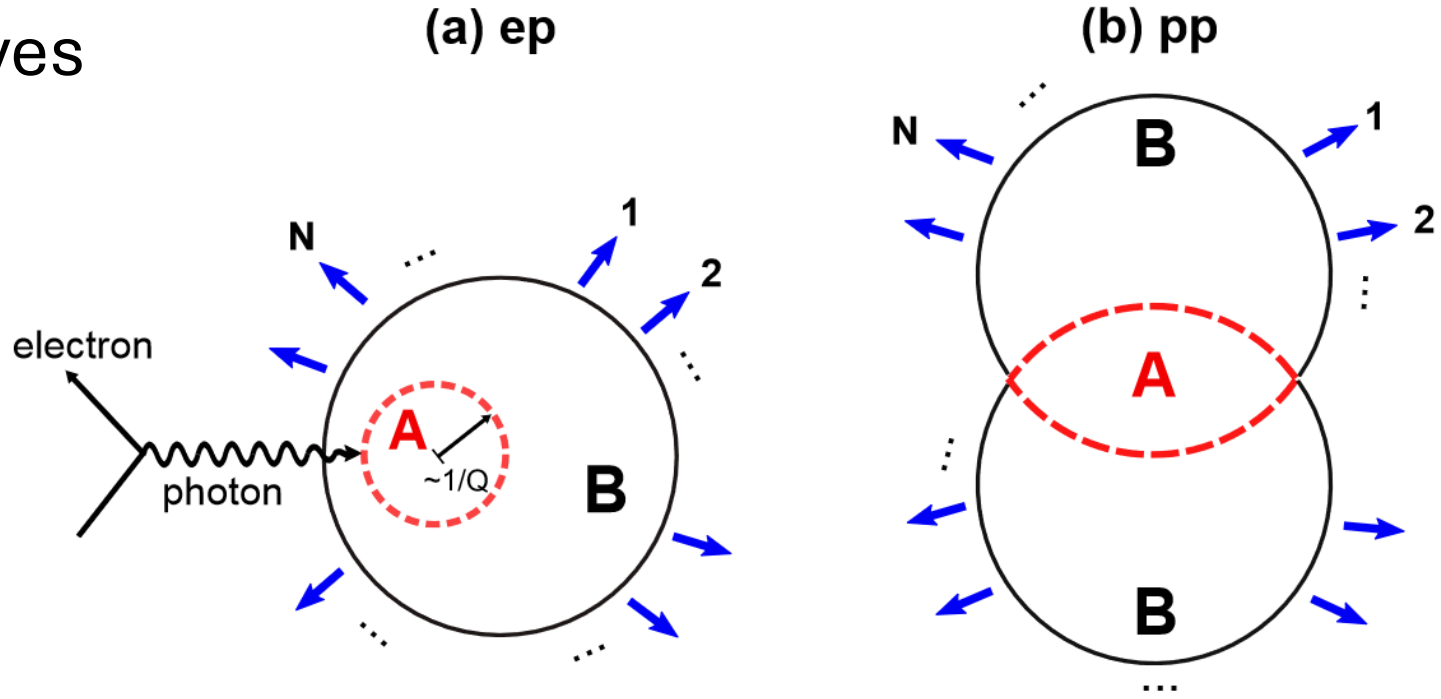
- “The confinement of coloured quarks inside a hadrons provides perhaps the most dramatic example of quantum entanglement that exists in nature.” (Tu, Phys. Rev. Lett.,124,6)

- Can we capture the “entanglementness” of the initial partonic system?



- Parton – hadron duality : yes

- Collision: sampling
- Observation: distribution of partons
- If maximally entangled, all partonic microstates have equal probability
- What is the distribution?



Maximal entanglement ⇒ maximal von Neumann entropy

Principle of maximal entropy ⇒ exponential distribution in the initial state

Parton – hadron duality ⇒ final state distribution: exponential distribution

Is it so? Visit my poster and find out!