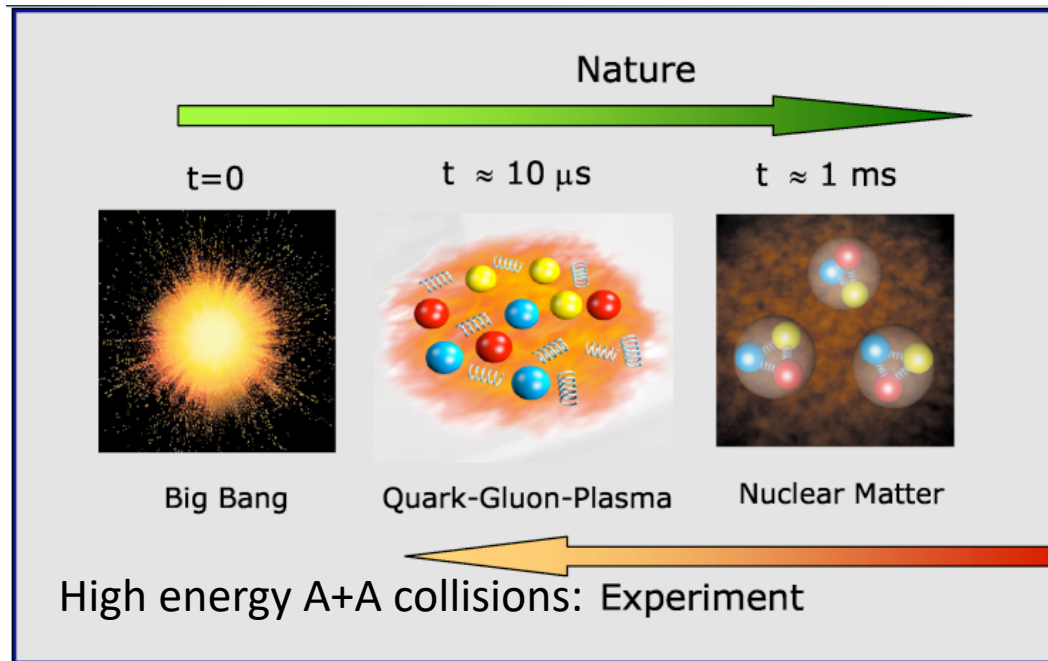


US Nuclear Physics Long Range Plan (2015)

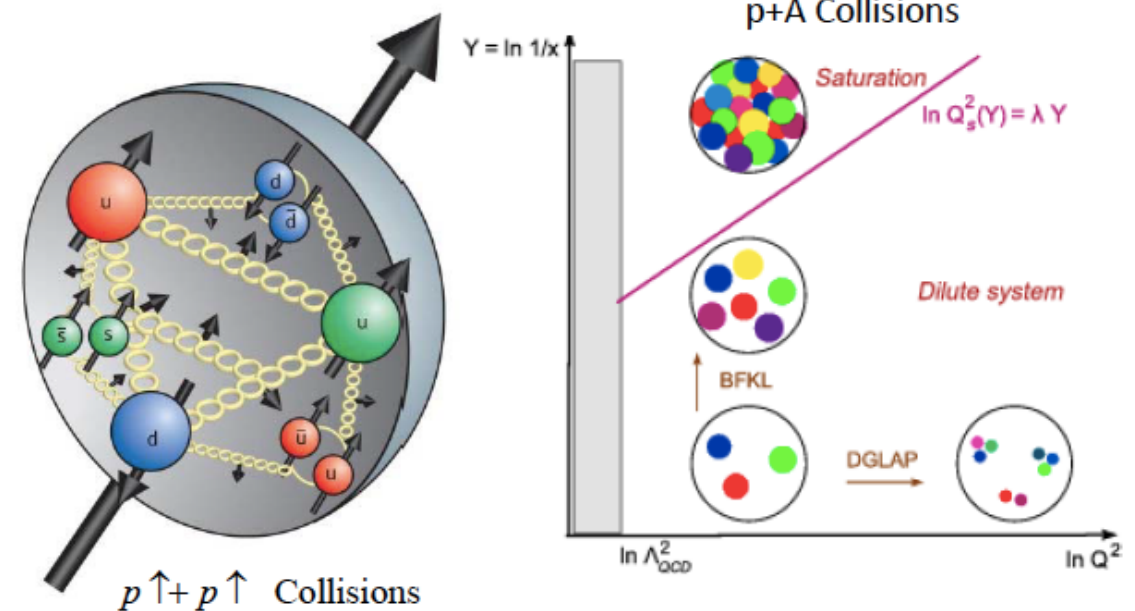
- High energy nuclear physics, Ming X. Liu @P-25

- Nuclear matter under extreme condition: Quark Gluon Plasmas (QGP) physics
- Nucleon structure with quarks and gluons and QCD dynamics: novel phenomena in strong interaction
- The origin of visible mass: >99% of the visible Universe

Hot QCD Matter – “recreate” the Big Bang in the Lab

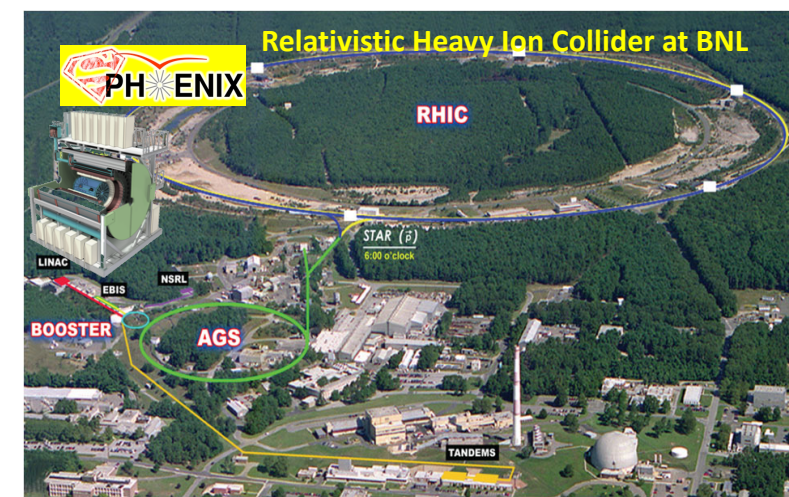


Cold QCD Matter – structures & dynamics of QCD



The sPHENIX Experiment at BNL

A new opportunity to study novel QCD matter and dynamics at the Relativistic Heavy Ion Collider at BNL



Hot QCD matter – QGP

- The DOE NP flagship heavy ion physics program (LRP2015)
“understanding the inner workings of QGP”
- Under construction, day-1 physics 2023

Novel Cold QCD matter & dynamics

- Under active development, with detector upgrade
- Nucleon/Nucleus structures & QCD dynamics

Why LANL?

- A long history of leading major NP experiments, including the sPHENIX heavy quark physics program, “LANL flagship experimental capabilities”(LDRD’18)
- Unique experimental and theoretical capabilities, world-leading experts in physics
- Bring in talents & new capabilities to LANL

