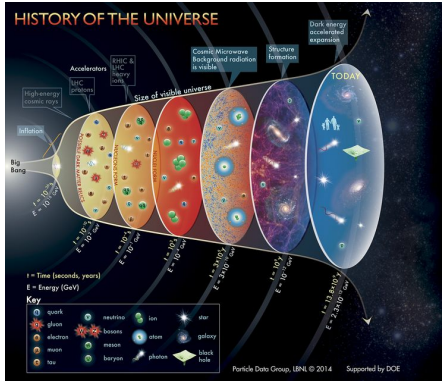
High Energy Nuclear & Particle Physics at LANL

Align with National Road Map of Big Science



Most fundamental questions in physical science - ***from quarks to cosmos***
- Develop & utilize (inter)national facilities w/ state of the art technology

NP NSAC Long Range Plan 2015

- Near future: 2016-2027+, CD0/2016, ~CD1/2018
  - QGP physics with sPHENIX at RHIC/BNL
- Future facility: 2027+, expected ~CD0/2019
  - QCD physics with Electron-Ion Collider in US

HEP P5 Report 2014

- High intensity frontier @Fermilab
  - **Dark matter**
  - Neutrino probe
- High energy frontier @LHC

LANL's Leadership at key HENP National Programs next 5 ~ 10+ years

Many in the early stage of R&D, physics feasibility and project planning

- QGP physics w/ sPHENIX at RHIC/BNL: Now – 2027+
  - Heavy quark probes with state of the art silicon pixel sensors (MAPS)
- QCD physics w/ Electron-Ion Collider, eRHIC/BNL (or J-Lab) – 2025+
  - sPHENIX -> ePHENIX, R&D and physics feasibility
- Novel nucleon structures, QCD and new physics at Fermilab: Now – 2020+
  - Sea-quarks inside nucleon; complementary to EIC
  - Dark photon/Dark Higgs search
- LHC opportunity – Energy frontier
- Fermilab opportunity - Intensity frontier

Branch out for LANL applied programs

Critical to continue supporting the program and training the next generations