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**George E. Valley Jr. Prize Talk: Discoveries in Nuclear Collisions and the Phases Quark Gluon
Matter**
PAUL SORENSEN, Brookhaven National Laboratory

The phase diagram of QCD matter contains many novel states beyond hadronic matter. By colliding heavy nuclei at ultra-relativistic energies, new phases of QCD matter can be created and studied in the laboratory. In this talk, I discuss the QCD phase diagram, recent discoveries at the Relativistic Heavy Ion Collider (RHIC), analogies with the early universe, and future programs to locate other landmarks on the QCD phase diagram.