Investigating the Quark Gluon Plasma with Heavy Ion Collisions

SCOTT PRATT, Michigan State University

By colliding heavy ion collisions at high energies, mesoscopic regions are created with temperatures near \(4 \times 10^{12}\) Kelvin. At these temperatures, protons and other hadrons melt and the quark-gluon plasma (QGP) is created. The transient state exists for less than \(10^{-22}\) seconds before cooling and disassociating. Experiments at the Relativistic Heavy Ion Collider and at the LHC record the tracks of the thousands of outgoing hadrons and electromagnetic particles in a single event. I will provide a few examples of how chemical and bulk properties of the QGP can be extracted by comparing sophisticated models of the collision to data.

\(^1\)Support was provided by the U.S. Department of Energy, Grant No. DE-FG02-03ER41259, and by the U.S. National Science Foundation, Grant No. PHY-0653432.