

PSF12-2012-000008

Abstract for an Invited Paper  
for the PSF12 Meeting of  
the American Physical Society

### **Investigating the Quark Gluon Plasma with Heavy Ion Collisions<sup>1</sup>**

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.

<sup>1</sup>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.