## 1052-35-156

## Jared Speck\* (jspeck@math.princeton.edu), 8 Vineyard St., Cambridge, MA 02138. The Global Nonlinear Stability of the Trivial Solution of the Einstein-Maxwell-Born-Infeld System.

The Maxwell-Born-Infeld (MBI) system has some remarkable properties that distinguish it among all Lagrangian field theories of classical electromagnetism. Although it was first studied in the 1930's, the MBI system has recently experienced a revival because of some interesting new developments in several scientific communities. For example, the MBI system plays a leading role in Kiessling's quest for a well-defined theory of classical electromagnetism with point charges. On the other end of the spectrum, the MBI Lagrangian has connections to string theory. In this talk, we will introduce the MBI system's special properties and our main problem of interest, which involves the coupling of the MBI equations to Einstein's field equations; i.e., the Einstein-Maxwell-Born-Infeld (EMBI) system. We will then discuss our main result, which is a proof that the vacuum Minkowski-space solution of the EMBI system is globally stable. Mathematically, our main result is a small-data global existence result for a quasilinear system of wave equations that satisfies a weak version of the null-condition. This work is an extension of previous stability results of Lindblad-Rodnianski, Loizelet, Christodoulou-Klainerman, Zipser, Klainerman-Nicolò, and Chae-Huh. (Received August 25, 2009)