Meeting: 1003, Atlanta, Georgia, SS 27A, AMS-SIAM Special Session on Analysis and Applications in Nonlinear Partial Differential Equations, I

1003-35-1233 **Jacob K Sterbenz*** (`sterbenz@math.princeton.edu`). *Global Stability for the* $(3 + 1)$ *Dimensional Maxwell-Klein-Gordon Equations.*

I will describe recent work in collaboration with Hans Lindblad on the asymptotic global behavior of the Maxwell-Klein-Gordon equations. Here we prove that the equations are globally stable on $(3 + 1)$ dimensional Minkowski space for small initial data in certain gauge covariant weighted Sobolev spaces. These spaces can be chosen to be almost scale invariant with respect to the homogeneity of the equations, and this result is valid for initial data with non-zero charge that is also non-stationary at space-like infinity. The method of proof is a tensor-geometric approach which is based on a certain family of weighted bilinear L^2 space-time estimates. In the talk, I will focus on estimates which apply to the complex scalar field. These are all of "Morawetz" type, and rely on a set of auxiliary energy-momentum tensors which arise from various conformal modifications of the Minkowski metric. (Received October 04, 2004)