1124-53-226 **Michael R Benfield**, **Helge Kristian Jenssen** and **Irina A Kogan*** (iakogan@ncsu.edu).

Hyperbolic conservation laws with prescribed eigenfields.

We consider systems of conservation laws $u_t + f(u)_x = 0$ in one spatial dimension, i. e. $x, t \in \mathbb{R}$, $u(x,t)$ belongs to an open subset of $\Omega \subset \mathbb{R}^n$, called the state space, and $f\colon \Omega \to \mathbb{R}^n$ is a smooth map, called flux. It is well known that eigenvectors of the Jacobian matrix of the flux play an important role in determining wave curves of a hyperbolic system of conservation laws, and hence in constructing solutions of the system. Since eigenvectors depend on a point in the state space, they are called eigenfields. We will discuss the inverse problem: finding hyperbolic conservative systems with fully or partially prescribed set of eigenfields. This problem is part of a larger project of determining the effects of geometric properties of the wave curves on the behavior of the solutions of the conservative systems. It also has an interesting geometric interpretation and can be studied via classical integrability theorems and their appropriate generalizations. (Received September 09, 2016)