1046-35-516 **Yuxi Zheng*** (yzheng@math.psu.edu), Department of Mathematics, University Park, PA 16802.

Mixed type problems and semi-hyperbolic waves in two-dimensional compressible Euler systems.

We talk about initial-value problems, and in particular Riemann problems, for the Euler system of equations for ideal compressible gases in two space dimensions. The problem allows for self-similar solutions which reduce the independent variables by one. But, the problem becomes hyperbolic-composite elliptic mixed type. We find that between the hyperbolic and elliptic regions, i.e., supersonic and subsonic, the solutions behave rather odd – characteristics exist locally but behave rather like elliptic averaging in the whole. Shock waves appear in the transition zone as well. We follow the nature of the problem and constructed typical patches of such solutions. These are from joint work with several co-workers including Jiequan Li, Xiaomei Ji, Kyungwoo Song, Seunghoon Bang, Mingjie Li, Tong Zhang, Xiaolin Li, Peng Zhang, James Glimm. (Received September 05, 2008)