**THE UNIVERSITY OF ALABAMA IN HUNTSVILLE**

**MATHEMATICAL SCIENCES COLLOQUIUM**

**Dr. Yanni Zeng**

Department of Mathematics

The University of Alabama in Birmingham

**Structural Conditions for Hyperbolic Balance Laws and Further Extension**

**DATE: Friday, October 2, 2015**

**TIME: 3:00 p.m. – 4:00 p.m.**

**PLACE: Shelby Center 218**

We will discuss a general system of hyperbolic balance laws. We propose a set of structural conditions consisting of a strictly convex entropy function, a number of conservation laws, and the Kawashima-Shizuta condition. The global solutions near a constant equilibrium state can be established via an energy method under these conditions. Further discussion will include large time behavior of solution for one space dimension, extension to hyperbolic-parabolic balance laws, and systems that violate the Kawashima-Shizuta condition. The general theory will be applied to physical examples in continuum physics such as Euler equations with damping, Kerr-Debye model, viscoelasticity with fading memory and thermal non-equilibrium flows.

**Refreshments will be served at 2:30 p.m. in SC 201 suite landing.**