

UCCS Mathematics

Colloquium

Thursday December 8th, 2011

UC 307

12:30 pm – 1:30 pm

(Refreshments at 12:15 pm)

Dr Gregory Lyng, University of Wyoming

Evans functions and the stability of viscous shock and detonation waves

Abstract: Viscous shock and detonation waves are special solutions of balance laws modeling the evolution of a mixture of compressible gases. In this talk I will describe the physical setting and outline a mathematical framework for studying the existence, structure, and especially the stability of these solutions. In recent years a collection of techniques, loosely centered around the Evans function---a spectral determinant, has been developed to deal with these stability problems. I will survey some of these techniques and the corresponding results. Finally, I will describe some of the ongoing research in this area and suggest some physical ramifications of these results.

