



The rising STAR of Texas

Differential Equations and Applied Math Seminar

Dr. Ray Treinen, Texas State University

11am-12pm November 17th, 2017

333 Derrick Hall

Title: Γ -convergence topics VIII

Abstract: We will continue our discussion of the gradient theory of phase transitions. We will prove an equi-coerciveness lemma that states that if the functional is given by

$$F_{\epsilon_j}(u_j) = \int_a^b (\epsilon_j^{-1}W(u) + \epsilon_j|u'|^2) dt,$$

where $W(u)$ is a double well function, then with some considerations there exists a subsequence of (u_j) converging in $L^1(a, b)$ to some piecewise constant function u . The limiting function u only takes on values so that $W(u) = 0$.

Then we will show that there exists a Γ -limit of this F_ϵ with respect to the $L^1(a, b)$ convergence, and give a particular form of its limit in terms of piecewise constant functions. This can be interpreted as the densities collecting into distinct phases in the limit. We will have taken the limit of minimizers to approximate problems and we will have shown that the limit minimizes a limiting problem.

We are mostly following the book by Andrea Braides.

Interested faculty and graduate students are encouraged to attend.