



Differential Equations and Applied Math Seminar

Dr. Ray Treinen, Texas State University

11am-12pm November 20th, 2020

Zoom

Title: Theory and applications of representing certain functionals with integrals, part VI

Abstract: We will complete our discussion of results from a paper by Buttazzo and Dal Maso. We will discuss the proof of the following:

Theorem. *For every functional $F : W^{1,p} \times \mathcal{B} \rightarrow \mathbb{R}$, $1 \leq p \leq \infty$, the following conditions are equivalent:*

1. *there exists an integrand $f \in Car_p$, quasi-convex in z , such that*

$$F(u, B) = \int_B f(x, u(x), Du(x)) dx,$$

for every $u \in W^{1,p}$ and every $B \in \mathcal{B}$,

2. *F is local on \mathcal{A} , is a measure, is p -bounded, satisfies the strong condition (ω) , and for every $A \in \mathcal{A}$ the function $u \mapsto F(u, A)$ is sequentially lower semicontinuous on $W^{1,\infty}$ for the weak* convergence and lower semicontinuous on $W^{1,p}$ for the strong convergence,*

3. *F is local on \mathcal{B} , is a measure, is p -bounded, satisfies the weak condition (ω) , and for every $A \in \mathcal{A}$ the function $u \mapsto F(u, A)$ is sequentially lower semicontinuous on $W^{1,\infty}$ for the weak* convergence.*

Interested faculty and graduate students are encouraged to attend.