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

Abstract: We will continue to discuss results from a paper by Buttazzo and Dal Maso. In this week’s seminar we will prove the following:

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

1. there exists an integrand \( f \in \text{Car}_p \) 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 \( \mathcal{B} \), is a measure, is \( p \)-bounded, and satisfies the strong condition \((\omega)\).

We will discuss some preliminary results for next week as well.

Interested faculty and graduate students are encouraged to attend.