

1014-49-1091

Y Chen, M Rao and **J C Twedde*** (twedde@math.ufl.edu), University of Florida, PO Box 118105, Gainesville, FL 32611. *Fenchel Transform of a Convex Functional.*

There are many applications that involve the minimization of a convex, linear growth function of a measure. For example, image restoration models, Plateau's problem and deformation of a thin plate (the plasticity problem) involve minimizing such functions. In order to understand the theory of these problems, we must understand how to give meaning $F(\mu)$, where μ is a vector valued measure and F is a convex function with linear growth.

In this paper, we use the space of continuous, bounded functions to define the Fenchel transform of a function of measure. We then show that under this definition, the double Fenchel transform coincides with the definition given by Anzellotti and Giaquinta (1982) and used throughout the literature. The lower semi-continuity of the functional $\int F(\mu)$ is a direct result of properties of the Fenchel transform. (Received September 27, 2005)