COLLOQUIUM DI MATEMATICA, FISICA E INFORMATICA

DIPARTIMENTO DI SCIENZE MATEMATICHE, FISICHE E INFORMATICHE
UNIVERSITÀ DEGLI STUDI DI PARMA

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Aula C, Plesso di Matematica

On the problem of uniqueness in the Calculus of Variations

Many problems can be equivalently formulated as optimisation problems and in turn these problems often have their natural set-up in terms of an integral functional defined on a Sobolev space of vector valued maps. The natural conditions for existence of minimizers are convexity type conditions, though they are in most cases much weaker than actual convexity. It is well-known that even under favorable conditions that ensure both existence and (partial) regularity of minimizers their uniqueness is not guaranteed. In this talk we show how exactly uniqueness is connected to convexity of the variational integral. We also give some results showing how uniqueness (and regularity) of minimizers can be ensured using smallness conditions on the data. It is important to emphasize that these smallness conditions are too weak to allow for a direct application of any known Implicit Function Theorem.

Organizzatore: Adriano Tomassini

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