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Martedì 14 Febbraio, alle ore 12.00 (in punto) presso la **Sala Riunioni** di questo Dipartimento, il chiarissimo

Professor Alberto MAIONE,

del *Department for Applied Mathematics* dell'*Albert–Ludwigs–University Freiburg*, Germania, terrà un *Seminario Scientifico* su:

Variational convergences for functionals and differential operators depending on vector fields

ABSTRACT. In this talk I present results concerning variational convergences for functionals and differential operators depending on a family of Lipschitz continuous vector fields X, that may not satisfy the well-known Hörmander condition. Classic examples of such families are the Euclidean gradient, the Grushin vector fields and the Heisenberg vector fields (as prototype of any Carnot group).
This setting was introduced by Folland and Stein and found numerous applications in the literature. The convergences taken into account date back to the 70's and are Γ-convergence, introduced by De Giorgi and Franzoni, dealing with functions and functionals, and G-convergence, or H-convergence, whose theory was initiated by De Giorgi and Spagnolo and developed by Murat and Tartar. This last convergence deals with differential operators.
The main result presented today is a Γ-compactness theorem, which ensures that sequences of integral functionals depending on X, with standard regularity and growth conditions, Γ-converge (up to subsequences) in the strong topology of L^p $(p > 1)$ to a functional belonging to the same class, that is, satisfying the same regularity and growth conditions and representable in an integral form.
As an interesting consequence of the previous result, I finally show that the class of linear differential operators in X-divergence form is closed in the topology of the H-convergence. The variational technique adopted to this aim relies on a new approach, introduced by N. Ansini, G. Dal Maso and C. I. Zeppieri.
This research is done in collaboration with Andrea Pinamonti *and* Francesco Serra Cassano *(University of Trento),* Fabio Paronetto *(University of Padova) and* Eugenio Vecchi *(University of Bologna).*

Il Seminario è rivolto a studenti magistrali, dottorandi e Postdoc, nonché a ricercatori interessati al settore. Sarà particolarmente gradita la presenza della S. V.

Enzo Vitillaro