

SEMINAIRE D'ANALYSE

➤ **MARDI 18 Février 2014 à 16h15 - salle MA A330**

Professeur **JAN KRISTENSEN** (Université d'Oxford, UK) donnera une conférence sur le thème:

« From Ornstein's non-inequalities to rank-one convexity »

Questions about sharp integral estimates for partial derivatives of mappings can often be recast as questions about quasiconvexity of associated integrands. Quasiconvexity was introduced by Morrey in his work on weak lower semicontinuity in the Calculus of Variations. It is by now recognized as a fundamental concept, but it remains somewhat mysterious. A closely related notion is that of rank-one convexity. Rank-one convexity is a necessary condition for quasiconvexity, and it is easy to check whether or not a given integrand is rank-one convex. Unfortunately, rank-one convexity is not equivalent to quasiconvexity.

An example of Sverak shows that, in high dimensions, there exists a quartic polynomial that is rank-one convex but not quasiconvex. However, it is still plausible that rank-one convexity could be equivalent to quasiconvexity within more restricted classes of integrands. An interesting class being the positively one homogeneous integrands. Their quasiconvexity properties correspond to L1-estimates.

In this talk I briefly review the convexity notions from the Calculus of Variations. I then show how the above viewpoint can be used to give a proof, and a generalization, of Ornstein's non-L1-inequalities.

Lausanne, le 22 janvier 2014

BD/BB/vl