

## GFM AND CMAFcIO SEMINAR

**Dia 12 Dezembro 2019 (quinta-feira), às 13h30, sala 6.2.38**

### About some energy functionals which penalize oscillations in oblique directions

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**Abstract:** We introduce a family of functionals defined on the space of measurable functions  $u(x, y)$  on a rectangle. These energies vanish on the non convex set  $S$  of functions  $u(x, y)$  which only depend on  $x$  or only depend on  $y$ . We show that under some conditions the converse implication is true (if the energy vanishes then  $u$  belongs to  $S$ ). We establish quantitative versions of this result showing that the energy controls the distance from  $u$  to  $S$ .

We also obtain a rather precise description of the functions with finite energy.

We present some generalization of these results in higher dimensions .

Eventually, we restrict the setting to Lipschitz continuous functions  $u$  and show that our work is related to some difficult regularity issues about scalar conservation laws.

(Collaboration with Michael Goldman, CNRS-University of Paris)