

Seminar EDPs

Speaker: Radu Ignat (Institut de Mathématiques de Toulouse, Francia)

Title: Separation and Interaction energy between domain walls in a nonlocal model.

Abstract: We analyse a nonconvex variational model from micromagnetics with a nonlocal energy functional, depending on a small parameter $\epsilon > 0$. The model gives rise to transition layers, called Néel walls, and we study their behaviour in the limit $\epsilon \rightarrow 0$. The analysis has some similarity to the theory of Ginzburg-Landau vortices. In particular, it gives rise to a renormalised energy that determines the interaction (attraction or repulsion) between Néel walls to leading order.

But while Ginzburg-Landau vortices show attraction for winding numbers of the same sign and repulsion for those of opposite signs, the pattern is reversed in this model.

First, we show that the Néel walls stay separated from each other and second, we determine the interaction energy between them.

The theory gives rise to an effective variational problem for the positions of the walls, encapsulated in a Gamma-convergence result.

This is a joint work with R. Moser (Univ. of Bath).

<https://uchile.zoom.us/j/89994401151?pwd=NGNUNGJVIZ1cjN3d05CeUFnOUcwUT09>

Meeting ID: 899 9440 1151

Passcode: 960909

Thursday (6/03) at 4:15 pm (Chilean time).