

Project Acronym: MULTIMAT
 Project ID(6 digits): 505226
 Project Participant: Institute for Applied Mathematics, University of Bonn, Department of Mathematical Methods in Physics

Name	Nationality	Previous place	Start date	Duration	Category	Place	Country
CAPELLA KORT, Antonio	Spaniard	Universitat Politecnica de Catalunya, Barcelona	10/3/2005	24 months	ER	Bonn	Germany

I obtained my Bachelor and a MSc in Physics at the Universidad Nacional Autonoma de Mexico, Mexico. I studied the PhD at the Universitat Politecnica de Catalunya in Barcelona, Spain. The main research topic in my PhD thesis is concerned with the stability properties of solutions of semi-linear elliptic equations. Stable solutions are related to the patterns that are found in some models in physics and biology. In particular, we studied the relation between stability, symmetry and variational properties of these solutions, both in bounded and unbounded domains.

In the framework of this Network, I have been assigned to carry out some of tasks in the relation of our team with the other teams in the network. This has been a very positive experience, since it has implied to be informed and to participate in almost all the network's activities. In particular, the exchanges with the team in Leipzig and the one in Barcelona have been very fruitful.

Since my incorporation to the network, I have attended to 7 different international conferences; all of them organized, or pointed out to me by the network. This has given me a considerable exposure to different ideas and interchange with international expert on the field. The interchange with other ER and ERS has been done mostly at the network meetings.

Also as part of my duties in Bonn, I have interact and work with the researchers and PhD students of the group, that are not necessarily official part of the network, but naturally work in very close related project.

In the framework of this Network, my principal research topic is concerned with the dynamic properties of magnetic domains in ferromagnetic materials. As main achievement in this research we have rigorously derived a dynamics model for different domain wall structures, where the main dissipation mechanism is given by the Joule's effect in the formed eddy currents. This model has two time scales that correspond to, fast precession of magnetic spins and the relaxation time of the system. The former time scale can be averaged out to deduce effective equations of motion, which can be used to give a more efficient description of the eddy current governed dynamics of ferromagnetic samples.

In overall my impression of the network is very positive, it has boost my opportunities to learn, participate and work in a international research environment, and certainly will increase my opportunities to find a good position afterwards.