

Basque Colloquium in Mathematics and its Applications

11:30 **Fabrice BETHUEL**, Université Paris VI–Pierre et Marie Curie, Paris, France

ON TOPOLOGICAL DEFECTS AND THEIR DYNAMICS

Several models in condensate matter theory involve vector-valued maps: liquid crystals, superconductors, superfluids... From the mathematical point of view, a very appealing feature of some of these models is that they involve singularities of genuine topological nature, termed, according to the model, kinks, vortices, or simply defects. In this talk, I will try to discuss and survey some results describing the behavior of these defects and their dynamics, mostly in the stationary and dissipative case, but also, if time permits, in the dispersive case.

12:30 **Ricardo H. NOCHETTO**, University of Maryland, College Park, USA

CURVATURE DRIVEN FLOWS IN DEFORMABLE DOMAINS

We discuss modeling, analysis, and computation of three challenging curvature driven flows in deformable domains: surface diffusion (materials science), electrowetting on dielectric (microelectromechanical systems MEMS), and fluid biomembranes (biophysics). We also discuss geometrically consistent accuracy preserving mesh modifications of piecewise polynomial surfaces with incomplete information about their underlying geometry. This is crucial for large domain deformations and a new paradigm in adaptivity.

13:45 **Lunch and informal discussion**

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Organizers and contacts:

BCAM-Basque Center for Applied Mathematics
Bizkaia Technology Park, Building 500, 1st floor, left, Derio - Basque Country- Spain <http://www.bcamath.org>
(roldan@bcamath.org)

Department of Mathematics, Faculty of Science and Technology UPV/EHU (LEIOA campus)
Box 644 Bilbao 48080. <http://www.ehu.es/mat> (miguel.escobedo@ehu.es)