Barcelona Analysis Seminar **2024–2025**

Date: Thursday April 3, 2025
Time: 15:00 CET
Room: UB T1 (Universitat de Barcelona)

Tetrahedral Frame Fields via Constrained Third-Order Symmetric Tensors

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In this talk I will present some results on Ginzburg-Landau approximations of frame fields. Frame fields with octahedral order (cross fields) have been used for mesh generation, while tetrahedral symmetry occurs in some liquid crystals. Compared to their 2D analog (triangular or "Mercedes-Benz" frames), tetrahedral frames have a more interesting topology with non-abelian fundamental group. Tetrahedral frame fields have a natural isometric embedding into third-order symmetric tensors that allows a Ginzburg-Landau type approximation, and I will show some of the topological singularities than can be observed. This is joint work with Dmitry Golovaty, Alberto Montero and Daniel Spirn.