

October 29-30, 2013  
9:30 - 11:30h  
(PART II)

Luis VEGA

BCAM - Basque Center for Applied Mathematics, Bilbao, Basque Country, Spain

### THE EVOLUTION OF VORTEX FILAMENTS WITH CORNERS

The aim of the course is to give a self contained exposition of the recent paper written in collaboration with F. de la Hoz about the vortex filament equation for a regular polygon [1]. This equation, also called Localized Induction Approximation, is a mathematical idealization of the real dynamics that is given by Euler equations. Geometrically the velocity of a given point of the filament is in the direction of the binormal with a speed that is proportional to the curvature. The underlying PDE is a non-linear Schrodinger equation, so that some elemental aspects of non-linear dispersive equations will be also reviewed.

#### References

- [1] F. de la Hoz, L. Vega, Vortex Filament Equation for a Regular Polygon, arXiv:1304.5521  
(<http://arxiv.org/abs/1304.5521>)