ECOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

B. Buffoni – M. Colombo – B. Dacorogna – J. Krieger - H.M Nguyên – Mathematics Section

SEMINAR OF ANALYSIS

***FRIDAY 7 DECEMBER 2018 - ROOM: MA A3 31 at* 2.15 pm**

Dr Miles ***WHEELER*** *(*University of Vienna, Austria)

will present a seminar entitled:

« *GLOBAL BIFURCATION OF ROTATING VORTEX PATCHES* »

Abstract:

Rotating patches of vorticity in a two-dimensional fluid have been studied since the work of Kirchhoff and Kelvin in the late 1800s. Recently there has been renewed interest in the rigorous existence and regularity of these special solutions of the Euler equations, as well as in related solutions of the (generalized) Surface Quasi-Geostrophic equations. In this talk we use global bifurcation techniques to construct highly nonlinear vortex patches which are far away from all of the known explicit solutions. We conjecture that our solutions limit to the singular patches with corners observed numerically by Wu, Overman and Zabusky in the 1980s. We also study the flow pattern outside of a rotating patch, and show that the patch boundary is analytic as soon as it is reasonably smooth.
This is joint work with Zineb Hassainia and Nader Masmoudi.

Lausanne, November 20, 2018
BB/rb

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Seminars are announced on the Mathematics Section website: http://memento.epfl.ch/maths/