Tuesday 24 April 2018 – at 11.45 am
Seminar Room “-1” – Department of Mathematics

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Stochastic vorticity equation: existence, uniqueness and regularity results in the flat torus and in the whole plane

Abstract:
In this talk we deal with the two-dimensional stochastic Navier-Stokes equations in their vorticity form. We consider at first the equations on the flat torus, with a stochastic forcing term given by a Gaussian noise, white in time and colored in space. We prove existence and uniqueness of a weak solution process in the martingale measure approach (Walsh notion of solution). Moreover, we prove the space-time continuity of the solution process and we study its regularity in the Malliavin sense.

Then we consider the Navier-Stokes equations in vorticity form in the whole plane $\mathbb{R}^2$ with a white noise forcing term of multiplicative type, whose spatial covariance is not regular enough to apply the Itô calculus in $L^q$ spaces, $q>1$. We prove the existence of a unique strong (in the probability sense) solution.

The talk is based on two joint works with B. Ferrario.

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