Department of Mathematics

North-East Midlands Stochastic Analysis Seminar supported by the London Mathematical Society and Department of Mathematics University of York

Organisers: Z. Brzeźniak (York), H. Boedihardjo, K. D. Elworthy and R. Tribe (Warwick), C. Feng and H.Z. Zhao (Durham), Z. Qian (Oxford)

Wednesday, 15th of February, 2023

All talks in room H/G21 Meeting Room (Eynns Room in Heslington Hall)

Zoom: https://york-ac-uk.zoom.us/j/93590736271?pwd=SzdzenJaOEh4RjRhTFdWUTRYbm40Zz09

Passcode: 469092

A one-day meeting will be held at the University of York as part of the LMS funded program of the North-East and Midlands Stochastic Analysis (NEMSA).

Speakers:

14:00-14:45 **Margherita Zanella (Milano, Italy):** Ergodic results for the two-dimensional stochastic Navier-Stokes equations driven by a multiplicative noise

14:50-15:35 **Benedetta Ferrario (Pavia, Italy):** Stationary solutions for nonlinear Schrödinger equation

15:40 Tea and coffee break

16:10-16:55 **Tommaso Rosati (Warwick):** Global in time solutions to perturbations of the 2D stochastic Navier-Stokes equations.

17:00 **Discussion**

17:30 **End of the meeting (***walk and dinner afterwards***)**

For more information on speakers and events, please contact:

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Information for accommodation: http://maths.york.ac.uk/www/VisitorAccommodation

For booking accommodation on campus email: bedandbreakfast@york.ac.uk

Travel information: http://www.york.ac.uk/admin/estates/transport

Abstracts:

Margherita Zanella: We consider the two-dimensional stochastic Navier-Stokes equations driven by a multiplicative noise. We establish a Foias-Prodi type estimate in expected value and, by means of asymptotic coupling techniques, we prove the uniqueness of the invariant measure. We only require that the range of the covariance operator contains the low modes. This is based on a joint work with B. Ferrario.

Benedentta Ferrario: Stationary solutions of the unforced nonlinear Schrödinger equation are obtained from a damped nonlinear Schrödinger equation with stochasting force when the intensity of the damping vanishes. We show that the limit process is non the trivial zero solution and keeps track of the approximating damped and driven equation, in the sense that the mean of the mass depends on the covariance of the noise term. This is based on a joint work with M. Zanella.

Tommaso Rosati: We prove global in time well-posedness for perturbations of the 2D Navier-Stokes equations driven by a perturbation of additive space-time white noise.

The proof relies on a dynamic high-low frequency decomposition, tools from paracontrolled calculus and an L^2 energy estimate for low frequencies. Our argument requires the solution to the linear equation to be a log-correlated field. We do not rely on (or have) explicit knowledge of the invariant measure: the perturbation is not restricted to the Cameron--Martin space of the noise. Our approach allows for anticipative and critical (L2) initial data. Joint work with Martin Hairer.