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**Università di Roma Tor Vergata**  
*Dipartimento di Fisica*



## ***Seminar***

Wednesday, 27 May 2015 - h. 14:00

*Sala Grassano (Dipartimento di Fisica)*

**Prof. Alexei A. Mailybaev**

*Instituto Nacional de Matemática Pura e Aplicada – IMPA  
Rio de Janeiro (Brasil)*

**“Spontaneous stochasticity of velocity  
in turbulence models”**

### ***Abstract***

We analyze the phenomenon of spontaneous stochasticity in fluid dynamics models formulated as the nonuniqueness of solutions resulting from infinitesimal viscosity acting through intermediate on large scales of the flow. We study the finite-time onset of spontaneous stochasticity in a real version of the GOY shell model of turbulence. This model demonstrates non-chaotic dynamics, but leads to an infinite number of solutions in the vanishing viscosity limit after the blowup time. Thus, the spontaneous stochasticity phenomenon is clearly distinguished from the chaotic behavior in turbulent flows. We provide the theoretical description of the system dynamics at all stages. This includes the asymptotic analysis before and after the blowup leading to universal (periodic and quasi-periodic) renormalized solutions, followed by nonunique stationary states at large times.

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Università degli Studi di Roma Tor Vergata  
C.F. n. 80213750583 – Partita IVA n. 02133971008 - Via della Ricerca Scientifica, 1 – 00133 ROMA