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Title: Gibbs measures for Hamiltonian PDEs: KMS property and completeness.

Abstract: During the past few decades, Gibbs measures have been used in nonlinear PDEs to establish various remarkable results related to almost sure well-posedness and flow properties. The main ingredients are Fourier analysis, the Hamiltonian structure and the measure invariance. In this talk I will report on some recent contributions obtained in collaboration with Shahnaz Farhat and Vedran Sohinger. In particular, the following aspects will be discussed: (i) The Kubo-Martin-Schwinger (KMS) property: I will define the KMS equilibrium states for Hamiltonian PDEs and show under certain hypotheses that there exists a unique KMS equilibrium state for such systems given by the Gibbs measure.

(ii) Completeness: I will underline a general principle proving that if a (Hamiltonian) PDE admits a stationary probability measure then the PDE admits almost surely global solutions.