Boğaziçi
MATH GRAD SEMINAR

# Quasi-invariant Gaussian Measures for Hamiltonian PDEs

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**Abstract: This talk concerns the evolution of Gaussian probability measures under Hamiltonian partial differential equations. Given initial data sampled from a Gaussian measure, we ask how the law of the solution changes with time. Invariance requires the evolved law to coincide with the initial law, whereas quasi-invariance requires only that the two laws be mutually absolutely continuous. Thus a quasi-invariant flow may change the probabilities of events while preserving which events have probability zero.**

**We will introduce Gaussian measures through random Fourier series and discuss the Sobolev regularity of a typical sample. We will state the Cameron–Martin theorem for translations and discuss Ramer's theorem as a sufficient criterion for quasi-invariance under nonlinear transformations. We will then discuss why Tzvetkov asked this question for Hamiltonian PDEs, and how quasi-invariant Gaussian measures relate to and differ from invariant Gibbs measures. Our running examples will be the fourth-order nonlinear Schrödinger equations.**

**Date** : Wednesday, November 18, 2026
**Time**: 15:00
**Place**: TB130