



Universidade Federal da Paraíba
Centro de Ciências Exatas e da Natureza
Programa de Pós-Graduação *Stricto Sensu* em Física

Ciclo de Colóquios 2019.2

Colóquio nº 12

“EXPERIMENTAL OBSERVATIONS IN A TURBULENT BEC: DEMONSTRATION OF NONTHERMAL STATES AND UNIVERSAL SCALING PROPERTIES”

RESUMO: One of the out-of-equilibrium states of great interest in superfluids is the state of turbulence. In this state, the proliferation of vortices or waves, creates one of several known states of turbulence. From equilibrium, with energy injection, there is evolution establishing a cascade of energy that causes migration of energy to high moments, resulting in a dependence of power law type in the energy spectrum. The reason the system evolves this way has to do with its quest for equilibrium, reaching possibly a stationary state. If the energy injection is ceased, the system evolves in time. Observing the high moment component in the distribution allows us to verify its dependence by determining whether it is a non-thermal state. We detected in our experiment regions of excitation, where exponential (rather than Gaussian) dependence reveals the presence of non-thermalizing states. Such out-of-equilibrium states exhibit universal behavior when scaled. This universal behavior is of great interest, specially if associated with turbulent states. (Financial support from FAPESP, CNPq and CAPES. This work had the participation of A. Garcia, A. Cedrim, G. Roati, G. Telles)

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16:00

Local: Auditório do PPGF (prédio novo)