Tails of the distribution of heat variations in the two-time measurement framework

Renaud Raquépas (Institute Fourier, Grenoble)

Abstract: The presented work concerns the distribution of heat variations for quantum statistical systems undergoing a perturbation. This distribution is defined according to the two-time measurement framework, also known as the full counting statistics approach.

We will see an ultraviolet regularity condition on the perturbation that ensures that the moments of the distribution of heat variations are uniformly bounded in time. A stronger condition ensures that the Fourier transform of the distribution is analytic and uniformly bounded in time in a complex neighbourhood of the origin. On a set of examples of bounded and unbounded perturbations, such ultraviolet conditions can be shown to be essentially necessary: if the form factor of the perturbation does not meet our regularity conditions, the distribution exhibits heavy tails. The tails can be as heavy as preventing the existence of a fourth moment.

This is joint work with T. Benoist and A. Panati.