Seminar des Graduiertenkollegs 1276

UNIVERSITÄT DES SAARLANDES

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"Entropic stochastic resonance: The constructive role of the unevenness"

We demonstrate the existence of stochastic resonance (SR) in confined systems arising from entropy variations associated to the presence of irregular boundaries. When the motion of a Brownian particle is constrained to a region with uneven boundaries, the presence of a periodic input may give rise to a peak in the spectral amplification factor and therefore to the appearance of the SR phenomenon. We have proved that the amplification factor depends on the shape of the region through which the particle moves and that by adjusting its characteristic geometric parameters one may optimize the response of the system. The situation in which the appearance of such entropic stochastic resonance (ESR) occurs is common for small-scale systems in which confinement and noise play a prominent role. The novel mechanism found could thus constitute an important tool for the characterization of these systems and can put to use for controlling their basic properties.

Freitag, 30. Januar 2009, 11 Uhr c.t.

Gebäude E2 4, Hörsaal IV

Alle Interessenten sind herzlich eingeladen.

Die Sprecher des Graduiertenkollegs
Manfred Lücke und Ludger Santen

Strukturbildung und Transport in komplexen Systemen