



PONDICHERRY UNIVERSITY

DEPARTMENT OF PHYSICS

Invited Lecture

on

"The Fibonacci family of dynamical universality classes"

by

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Abstract

We study general properties of fluctuations in one-dimensional systems far from thermal equilibrium [1]. For more than one conservation law we predict a discrete family of dynamical universality classes with dynamical exponents which are consecutive ratios of neighboring Fibonacci numbers, starting with $z = 2$ (corresponding to a diffusive mode) or $z = 3/2$ (Kardar-Parisi-Zhang (KPZ) mode). If neither a diffusive nor a KPZ mode are present, all Fibonacci modes have as dynamical exponent the golden mean $z = (1 + \sqrt{5})/2$. The scaling functions of the Fibonacci modes are asymmetric Lévy distributions which are completely fixed by the macroscopic current-density relation and compressibility matrix of the system. The theoretical predictions are confirmed by Monte-Carlo simulations of a three-lane asymmetric simple exclusion process.

[1] V. Popkov, A. Schadschneider, J. Schmidt, and G. M. Schütz, PNAS Early Edition (2015),
www.pnas.org/cgi/doi/10.1073/pnas.1512261112

Date: 17th November, 2015

Time: 11:30 a.m.

Venue: Raman Seminar Hall, Department of Physics

All are Welcome

Handwritten signature of Alok Sharan.

Dr Alok Sharan
(Seminar Coordinator)

Handwritten signature of Prof R Murugan.

Prof R Murugan
Professor & Head of the Department
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