ICTS Statistical Physics and Condensed Matter Seminar (HYBRID)

Title : Power laws in space-time: Real and complex exponents, Self-organized criticality and Griffiths phase, Ising type transitions

Speaker : Prashant M. Gade (RTM Nagpur University)

Date : Wednesday, 31st May 2023

Time : 11:30 AM (IST)

Abstract : Power laws in space and time are obtained in a variety of systems. Self-organized criticality (SOC) was an exotic explanation proposed by Per Bak. Another less exxotic but more plausible explanation for power laws in range of parameters was Griffiths phase dueto quenched disorder. a) We study a coupled map lattice model where fitness is inferred from dynamics, unfit species punished and observe SOC. b)We study contact processes with disorder in topology or evolution rules. We observe continuously varying complex exponents for order parameter decay or persistence. It is due to effective fragmentation of lattice. c) We proposed an order parameter for zigzag and checkerboard pattern by local spatial slope. We find a power-law decay of this order parameter as well as persistence in a range of parameter values.

1.Matte & PMG Commun, Nonlin. Sci. Nonlin. Simul. ,65,91(2018)

2.Bhoyar & PMG PRE,103,022115(2021),PRE,101,022128(2020)

3.Warambhe & PMG Chaos, Solitons and Fractals,172,113510 (2023)

Venue : **Offline:** Emmy Noether Seminar Room (ICTS)

Online: Please click the below link to join the seminar.

https://icts-res-in.zoom.us/j/87512174762?pwd=c2l0dWNORXpxSndXakhmNnhMV1R5UT09

Meeting ID: 875 1217 4762

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