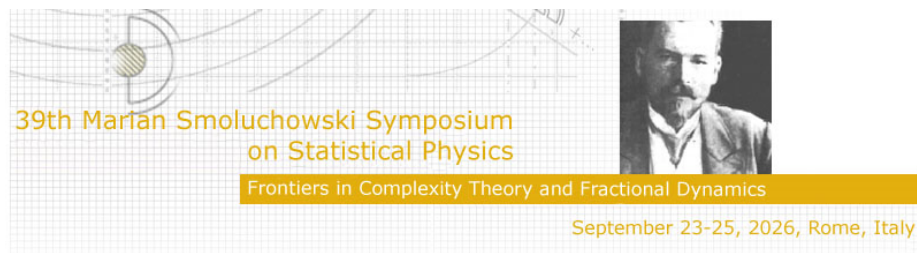


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Unusual transport in odd-diffusive systems

Thursday, 24 September 2026 15:30 (1h 30m)

Odd systems, characterised by broken time-reversal or parity symmetry, exhibit striking transport phenomena due to transverse responses. In this talk, I will introduce the concept of odd diffusion, a generalisation of diffusion in two-dimensional systems that incorporates antisymmetric tensor components. Focusing on systems of interacting particles, I present analytical results on effective transport coefficients and show how oddness in interacting systems gives rise to unusual transport. I present effects like enhanced self-diffusion, reversed Hall drift, and even absolute negative mobility that solely originate in odd diffusion. These results reveal how microscopic symmetry-breaking, encoded in unusual autocorrelation functions, gives rise to emergent equilibrium and non-equilibrium transport with implications for soft matter, chiral active systems, and topological materials.

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