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The Anomalous Transport of Tracers in Active Baths

We derive the long-time dynamics of a tracer immersed in a one-dimensional active bath. In contrast to previous studies, we find that the damping and noise correlations possess long-time tails with exponents that depend on the tracer symmetry. For an asymmetric tracer, the tails lead to superdiffusion and friction that grows with time when the tracer is dragged at a constant speed. For a symmetric tracer, we recover normal diffusion and finite friction. However, when the symmetric tracer is small compared to the active-particle persistence length, the noise becomes anticorrelated at late times, and the active contribution to the friction becomes negative: active particles then enhance motion rather than opposing it.

The event is part of the group seminar AG Stark at TU Berlin and will take place in a hybrid format (room ER 164 at TU Berlin and online via Zoom). For information on how to access the event, please contact: henning.reinken@itp.tu-berlin.de

Wednesday, 10.11.2021 · 14:15h · ER 164/via Zoom

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