



UNIVERSITÄT
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Physics Colloquium

Tuesday, May 28, 2024 at 16:30

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Non-equilibrium dynamics of active Brownian particles (ABP) - a paradigm in soft matter/biological physics

Various challenges are faced when animalcules such as bacteria, protozoa, algae, or sperms move autonomously in aqueous media at low Reynolds number. These active agents are subject to strong stochastic fluctuations, that compete with the directed motion. Active particles have come into recent focus in statistical physics since they constitute simple but realistic models for systems far from equilibrium. So far, most studies consider the lowest-order moments of the displacements only, while more general spatio-temporal information on the stochastic motion is provided in scattering experiments. Here we derive analytically exact expressions for the directly measurable intermediate scattering function for a mesoscopic model of a single, anisotropic active Brownian particle relying on techniques familiar from elementary quantum mechanics. We compare our results to experiments on self-propelled Janus particles both for single-particle tracking as well as dynamic differential microscopy (DDM).



Venue: **small lecture hall**. Universität Leipzig, Faculty of Physics and Earth Sciences 04103 Leipzig, Linnéstraße 5.

Everyone is welcome to a reception with coffee, drinks and cookies in the Aula following the talk.

For an up-to-date semester program, sign-up for the physics colloquium mailing list, and subscription to the digital calendars in CalDAV format, head to the colloquiums web page <https://www.physes.uni-leipzig.de/fakultaet/veranstaltungen>

