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Self-phoresis driven by correlations – a new mechanism

A usual way of achieving a self-propelled particle relies on the catalytical activity of the particle, that thus induces chemical gradients in the ambient fluid solution. The mechanism responsible for self-propulsion has been a matter of recent debate, but there seems to be a consensus on the relevance of chemiophoresis in the self-induced gradient. A key aspect of the theoretical understanding is the differential interaction of the particle with the products and reactants, i.e., that the latter have a tendency to wet (or dewet) the particle's surface.

Here I will present an alternative, recently identified mechanism [1] for chemiophoresis that relies instead on the non-vanishing correlation length of fluctuations in the fluid solution. The model predicts self-propulsion velocities comparable in value to the observed ones, but also characteristic features that lead to observable differences as compared with the mechanism based on wetting.

[1] Domínguez et al., Phys. Rev. Lett. **125**, 268002 (2020).

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, 24.11.2021 · 14:15h · ER 164/via Zoom

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