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Title:	Coarse graining nonisothermal microswimmer suspensions.
Authors:	Chakraborty, Dipanjan (/jspui/browse?type=author&value=Chakraborty%2C+Dipanjan)
Keywords:	nonisothermal microswimmer suspensions
Issue Date:	2021
Publisher:	Frontiers Media
Citation:	Frontiers in Physics, 9.
Abstract:	We investigate coarse-grained models of suspended self-thermophoretic microswimmers. Upon heating, the Janus spheres, with hemispheres made of different materials, induce a heterogeneous local solvent temperature that causes the self-phoretic particle propulsion. Starting from molecular dynamics simulations that schematically resolve the molecular composition of the solvent and the microswimmer, we verify the coarse-grained description of the fluid in terms of a local molecular temperature field, and its role for the particle's thermophoretic self-propulsion and hot Brownian motion. The latter is governed by effective nonequilibrium temperatures, which are measured from simulations by confining the particle position and orientation. They are theoretically shown to remain relevant for any further spatial coarse-graining towards a hydrodynamic description of the entire suspension as a homogeneous complex fluid.
Description:	Only IISER Mohali authors are available in the record.
URI:	<a href="https://doi.org/10.3389/fphy.2021.655838">https://doi.org/10.3389/fphy.2021.655838</a> ( <a href="https://doi.org/10.3389/fphy.2021.655838">https://doi.org/10.3389/fphy.2021.655838</a> ) <a href="http://hdl.handle.net/123456789/5213">http://hdl.handle.net/123456789/5213</a> ( <a href="http://hdl.handle.net/123456789/5213">http://hdl.handle.net/123456789/5213</a> )
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