

Abstract Submitted
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Active Brownian particles near straight or curved walls: Pressure and boundary layers¹ AYHAN DUZGUN, JONATHAN SELINGER, Kent State Univ - Kent — Unlike equilibrium systems, active matter is not governed by the conventional laws of thermodynamics. Through a series of Langevin dynamics simulations and analytic calculations, we explore how systems cross over from equilibrium to active behavior as the activity is increased. In particular, we calculate the profiles of density and orientational order near straight or circular walls, and show the characteristic width of the boundary layers. We find a simple relationship between the enhancements of density and pressure near a wall. Based on these results, we determine how the pressure depends on wall curvature, and hence make approximate analytic predictions for the motion of curved tracers, as well as the rectification of active particles around small openings in confined geometries.

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