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**On the distribution and swim pressure of run-and-tumble particles in confinement** ROBERTO ALONSO MATILLA, BARATH EZHILAN, DAVID SAINTILLAN, UC San Diego (UCSD) — The spatial and orientational distribution in a dilute active suspension of non-Brownian run-and-tumble spherical swimmers confined between two planar hard walls is calculated theoretically. Using a kinetic model based on coupled bulk/surface probability density functions, we demonstrate the existence of a concentration wall boundary layer with thickness scaling with the run length, the absence of polarization throughout the channel, and the presence of sharp discontinuities in the bulk orientation distribution in the neighborhood of orientations parallel to the wall in the near-wall region. Our model is also applied to calculate the swim pressure in the system, which approaches the previously proposed ideal-gas behavior in wide channels but is found to decrease in narrow channels as a result of confinement. Monte-Carlo simulations are also performed for validation and show excellent quantitative agreement with our theoretical predictions.

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