Abstract Submitted
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**Stress-induced reversal of flagellar propulsion: an ingredient of quorum polarity of** *Bacillus subtilis*[1] L. CISNEROS, C. DOMBROWSKI, R.E. GOLDSTEIN, J.O. KESSLER, University of Arizona — Recent experiment have shown large-scale dynamic coherence in suspensions of the bacterium *B. subtilis*, characterized by quorum polarity – the collective parallel swimming of cells. To probe mechanisms leading to quorum polarity, we study the response of individual *B. subtilis* cells to steric stress brought on by swimming into a micron-sized spatial constriction. Careful visualization shows that cells can fully reverse their swimming direction at spatial constrictions without turning the cell body. This property, termed "flippancy," is quantified by measurements of the inward and outward swimming velocities, accelerations and decelerations, and docking times. The asymptotic inward and outward swimming speeds far from the constriction show near perfect correlation, implying that the propelling flagella flip, and that "forwards" and "backwards" are dynamically indistinguishable, as with *E. coli*. Implications for the collective dynamics are discussed.

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