Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Tethered motion of uniflagellated bacteria at the liquid-solid surface JORDAN BELL, JAY TANG, Brown University — Direct evidence of the bacterial flagellar motors rotation was first noted when multiflagellated bacterial cells were observed (under the optical microscope) to rotate when tethered to glass by a single flagellum. The tethered cell assay has continued to play a significant role throughout the subsequent studies of motor characteristics and behavior. Such studies have expanded to include uniflagellated bacteria, such as *Vibrio alginolyticus, Pseudomonas aeruginosa,* and *Caulobacter crescentus*. Here we show that such cells are not necessarily tethered by their flagellum, but rather elsewhere on the cell body. The observed cell body rotation is actually due to the flagellum either rolling against the glass surface, or pushing the cell body at the flagellar base. These motions are directly observed for *Vibrio alginolyticus* with darkfield microscopy. Additionally, our recently measured distributions of intervals between motor switches for tethered *Caulobacter crescentus* also confirm this more complicated mode of tethering. Therefore, the rotational speed of tethered uniflagellated bacteria may not equate to that of the motor itself, as is commonly assumed.

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Date submitted: 14 Jan 2016 Electronic form version 1.4