Propulsion and fluctuations in magnetotactic bacteria

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Magnetotactic bacteria are microbes that orient in magnetic fields with the help of an intracellular compass needle, the magnetosome chain. They provide a unique opportunity to study the interplay of generic physical processes with specific biological control mechanisms and to understand how physics enables new biological functions, but also imposes constraints on them. Specifically, I will discuss their swimming patterns while directed by a magnetic field and their orientation fluctuations, which have been shown to have a non-thermal contribution.

[1] S. Klumpp, C. T. Lefèvre, M. Bennet, D. Faivre, Swimming with magnets: from biological organisms to synthetic devices, Phys. Rep. 789, 1-54 (2019).