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## WHAT IF THEY SWIM?

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Over the last years, there has been a sustained interest in the collective dynamics of microorganisms [1]. These organisms are able to convert energy from the surrounding environment into directional movement. They are therefore called active particles, in contrast to the passive particles (e.g., colloids) which erratic motion (Brownian) in solution only results from multiple collisions with atoms and/or molecules of the surrounding medium. Given the lack of ability to describe deterministically the interaction of these particles with their surrounding medium, their individual dynamics is typically described by phenomenological models where the equations of motion are described by stochastic differential equations. Some differences and similarities between the dynamics of passive and active particles will be discussed. Numerical results will be presented which are obtained by integrating the equations of motion of each type of particles. Some interesting applications will also be discussed.

### References

- [1] C. Bechinger *et al.* *Active Brownian Particles in Complex and Crowded Environments*. arXiv 1602.00081v1.