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**Motility-Induced Phase Separation in Active Matter: a generic formalism for active brownian particles and run-and-tumble particles**

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In this talk I will show that several classes of active particles admit an identical coarse-grained description in terms of fluctuating hydrodynamic fields. This equivalence holds as long as the microscopic parameters (e.g. swim speed $v$, diffusivity or tumbling rate), that may be spatially varying, depend on the local density $\rho$ of particles but not on their orientation. This equivalence can thus extend to interacting particles and shows that motility-induced phase separation is generic in these systems: a steeply enough decreasing $v(\rho)$ generates phase separation in dimensions d=1,2,3. I will discuss the consequences of this phenomenon for pattern formation in bacterial colony and effective temperatures in Active Matter.