Abstract for an Invited Paper
for the MAR10 Meeting of
The American Physical Society

Molecular noise, cellular behavior and navigation strategies

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Bacterial chemotaxis is a cellular navigation system that allows bacteria to move towards sources of attractants and to avoid repellants. Although the chemotaxis network consists of just a few molecular species, it can perform complex cellular functions such as adaptation in response to environmental changes. This pathway is also one of the best characterize signal transduction pathways in biology. I will analyze the effect of the intracellular localization of the molecular components of this model system on its adaptation dynamics and ultimately on the behavior of an individual bacterium.