



Stripe formation in bacterial systems with density-suppressed motility

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Engineered bacteria in which motility is reduced by local cell density generate periodic stripes of high and low density when spotted on agar plates. We study theoretically the origin and mechanism of this process in a kinetic model that includes growth and density-suppressed motility of the cells. The spreading of a region of immotile cells into an initially cell-free region is analyzed. From the calculated front profile we provide an analytic ansatz to determine the phase boundary between the stripe and the no-stripe phases. The influence of various parameters on the phase boundary is discussed.

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