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Kinetics of Cloak Development of Droplets on Lubricated Polymer Brushes

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The interaction of liquid droplets with lubricated substrates is rich with interesting physics combining thermodynamics, polymer science, and fluid dynamics, and has the potential for various industrial applications. In previous work, we showed the existence of a cloaking transition where the lubricant covers the surface of the droplet at equilibrium. Here, we describe the kinetics of the developing cloak. We show that in simulation the time scales are diffusive, and model them through a simple diffusion model. We in addition illustrate the peculiar effect of the simulation parameters.

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