

Abstract Submitted  
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**Automatic quantification of early transition points in biofilm formation** TRAVIS THATCHER, SAMUEL BIENVENU, SHINJI STRAIN, VERNITA GORDON, Department of Physics, University of Texas at Austin — Biofilms are multicellular, dynamic communities of interacting single-cell organisms, like bacteria. Biofilms are responsible for many infectious diseases as well as for significant damage in industrial settings, yet many aspects of biofilm formation are not well understood. Identifying and quantifying the interactions leading to biofilm formation will not only be important for understanding the basic science of these and other multicellular systems, but it will also be essential for designing targeted strategies to prevent or disrupt biofilms. In particular, it is not clear what physical interactions, and corresponding biological mechanisms, are responsible for the early steps in biofilm formation. Because of this, we are developing high-throughput software techniques to analyze micrograph movies of biofilm formation, from attachment to surfaces through the development of microcolonies. This work will focus on developing software tools to identify and quantify key steps in biofilm formation, first in non-chemotacting systems and later in chemotacting (and autotacting) systems.

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