

Toward an Ecophysical Theory for the Dynamics of Complex Microbial Systems

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Abstract

Understanding how complex microbial ecosystems come together and change through time is a fundamental goal in biology, but it is also of practical importance, with applications ranging from agriculture to medicine. In this talk, I will discuss challenges in the development of modern theories for microbial community dynamics. I then go on to present new data analytic and math modeling approaches for coarse-grained microbial systems, motivated by ecological and physical theories of islands, fragmented habitats, disturbance, and energy flows on ecological networks (all originally designed with macroscopic ecosystems in mind). Finally, I present



empirical data that highlights potential real world applications for a coherent network-based theory of microbial system dynamics.

About the Speaker

Dr. Ashkaan K. Fahimipour is a National Research Council Associate with the National Oceanic and Atmospheric Administration, and a Research Associate in the Dept. of Computer Science at the University of California, Davis. His research combines mathematical and statistical modeling with data mining and experiments to understand how complex ecological systems come together, change through time, and fall apart.