

Diffusion Limited Aggregation: A Paradigm of Disorderly Cluster Growth:

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abstract The purpose of this talk is to present a brief overview of our group's recent research into dynamic mechanisms of disorderly growth, an exciting new branch of condensed matter physics in which the methods and concepts of modern statistical mechanics are proving to be useful. Our strategy has been to focus on attempting to understand a single model system—diffusion limited aggregation (DLA). This philosophy was the guiding principle for years of research in phase transitions and critical phenomena. For example, by focusing on the Ising model, steady progress was made over a period of six decades and eventually led to understanding a wide range of critical point phenomena, since even systems for which the Ising model was not appropriate turned out to be described by variants of the Ising model (such as the XY and Heisenberg models). So also, we are optimistic that whatever we may learn in trying to “understand” DLA will lead to generic information helpful in understanding general aspects of dynamic mechanisms underlying disorderly growth.