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Mathematical Challenges in Submonolayer Deposition

Abstract:

Submonolayer deposition (SD) is a blanket term used to describe the initial stages of processes, such as molecular beam epitaxy, in which material is deposited onto a surface, diffuses and forms large-scale structures. It is easy to simulate using Monte Carlo methods, but theoretical results are few and far between. I will discuss various approaches to SD in the 1-dimensional situation, focusing on open mathematical problems and the difficulty of passing to the 2-dimensional case, which is of most applied interest. This is mainly joint work with Paul Mulheran.