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Modeling the Self-Assembly of Quantum Dots in Thin Solid Films MARGO LEVINE, Northwestern University, ALEXANDER GOLOVIN, STEPHEN DAVIS, PETER VOORHEES — The self-assembly of quantum dots in a thin solid film caused by epitaxial stress and wetting interactions with the substrate is studied. It is shown that wetting interactions change the instability spectrum from long wave to short wave which can lead to spatially regular arrays of quantum dots. A nonlocal, nonlinear evolution equation for the film shape is derived, and the stability of dot arrays with different symmetries is studied. Regions in the parameter space are determined where spatially regular surface structures can be observed in experiments.

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