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Irene Fonseca* (fonseca@andrew.cmu.edu), Department of Mathematical Sciences, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213. *Quantum Dots and Dislocations: Dynamics of Materials Defects.*

The formation and assembly patterns of quantum dots have a significant impact on the optoelectronic properties of semiconductors. We will discuss shapes of quantum dots and short time existence for a surface diffusion evolution equation with curvature regularization in the context of epitaxially strained three-dimensional films. Further, short time existence, uniqueness, and qualitative properties of solutions to an evolution law for systems of screw dislocations under the assumption of antiplane shear will be obtained. (Received January 20, 2015)