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Antonio Mastroberardino* (axm62@psu.edu), Penn State Erie, The Behrend College, School of Science, 4205 College Drive, Erie, PA 16563-0203, and **Brian J Spencer**. *Three-dimensional equilibrium crystal shapes with corner energy regularization.*

The evolution equations of crystal growth often employ a regularization of the surface energy based on a corner energy term. Here we consider the effect of this regularization on the equilibrium shape of a solid particle in three dimensions. We determine that a sufficient regularization involves only one of the two isotropic invariants related to curvature. Using a long-wave approximation, we derive a nonlinear equation for the shape of a semi-infinite wedge in the case when the surface energy has cubic symmetry. An analytic description of the solution along an edge is given as well as an exact solution for a special case of anisotropy. Finally, this equation is solved numerically to demonstrate explicit solutions for which the regularization rounds the edges of the unregularized crystal shape. (Received September 15, 2008)