

# A mesoscopic model for snow crystal growth

Janko Gravner (University of California, Davis, USA)

## Abstract:

The talk will review a mesoscopic approach to crystal growth modeling, developed jointly with David Griffeath. A three-dimensional, computationally feasible, mesoscopic model is based on diffusion of vapor, anisotropic attachment, and a boundary layer.

Several case studies will be presented that faithfully replicate most observed snow crystal morphology. In particular, many of the most striking physical specimens feature both facets and branches and our model provides an explanation for this phenomenon.

We also duplicate many other observed traits, including ridges, ribs, sandwich plates, and hollow columns, as well as various dynamic instabilities. The concordance of observed phenomena suggests that diffusion with anisotropic attachment is the most important ingredient in the development of physical snow crystals.