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Growth-Melt Asymmetry in Ice A. CAHOON, Yale University, M. MARUYAMA, Osaka City University, J.S. WETTLAUFER, Yale University — It is well known that the Wulff Shape of a crystal is anisotropic at temperatures below the roughening temperatures for the principal facets. In the case of ice in contact with water, the roughening temperature of the prism facet was found by Maruyama to be -16.5 deg C, whereas the basal plane is molecularly smooth up to the bulk transition. Therefore, *growth* of ice in this range of temperature is anisotropic. We study the anisotropy during *melting* under small disequilibrium melt drives and extend geometric theory to explain the apparent reorientation of the underlying crystallographic axes observed experimentally. The dynamical melt shapes appear faceted despite the lack of a surface phase transition and we explain the behavior using a geometric treatmen of the basic kinetics of molecular detachment from the surface.

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