

**Determination of Ice Sheet Motion and Topography using Radar Interferometry**

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Abstract Form**

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Satellite radar interferometry over the ice sheet is a valuable tool for monitoring ice sheet flow velocities and surface relief. The observed fringe patterns in an interferogram are expressions of both ice motion and ice sheet, topography. We demonstrate here that if the ice flow velocity is constant over the period of observation, the fringe patterns due to ice motion can be separated from those due to topography if a time-series of synthetic aperture radar observations are available. Briefly, we use differential interferometry to remove the phase contributions of the displacement field to obtain a topography-only interferogram. We then subtract this topography-only interferogram from the mixed fringe patterns to separate the displacement fringes from those due to relief. We illustrate this technique with a series of four ERS-1 images over a flow feature in northeast Greenland.

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