1164-78-31 **Mikhail Gilman** (mgilman@ncsu.edu), Department of Mathematics, Box 8205, Raleigh, NC 27695-8205, and **Semyon Tsynkov*** (stsynkov@unity.ncsu.edu), Department of Mathematics, Box 8205, Raleigh, NC 27695-8205. *A mathematical perspective on radar interferometry.*

Radar interferometry utilizes two or more slightly different images of the same target to derive additional information about the target. Its applications include digital elevation maps, monitoring of glacier movement, and others. These tasks require centimeter-level accuracy, yet the distance between a spaceborne radar and imaged object(s) could be a hundred million times larger. The required sensitivity is enabled by comparing the complex phases of two images, which reveals differences in signal path length as small as a fraction of the wavelength. However, the lack of precision in antenna position and other disturbances generate ambiguities that exceed the effect of interest by orders of magnitude.

Yet the common exposition in the literature often skips the various important details related to ambiguities of interferometric measurements. This may lead to unrealistic accuracy requirements for imaging geometry, etc. To address these deficiencies, we analyze the problem of interferometric height reconstruction and provide a careful and detailed account of all the assumptions and requirements to the imaging geometry and data processing needed for a successful height retrieval. (Received January 11, 2021)