

Abstract Submitted
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A technique for removing distortion due to thermal drift in scanning probe microscope images¹ BRIAN S. SALMONS, MATTHEW L. TRAWICK, Department of Physics, University of Richmond — A common source of distortion in scanning probe microscope images is the slow thermal expansion of different materials in the sample and microscope due to small fluctuations in temperature over the course of a scan. We model this distortion as a low-order polynomial function of time (and thus of the slow scan axis), and determine the polynomial coefficients by comparing the original image to a second, partial scan on which the fast and slow axes have been reversed. Our method searches all possible sets of polynomial coefficients to find the unique set that would be consistent with both images. Because the algorithm compares the entirety of both images for each possible set of coefficients, we expect it to be robust against common local imaging artifacts such as streaking and pixel noise. We also address speed considerations in implementing this computationally intensive technique.

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