

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Crystallographic Image Processing for Atomic Force and Scanning Tunneling Microscopists BILL MOON, PAVEL PLACHINDA, JACK STRATON, Department of Physics, Portland State University, Portland OR 97207-0751, PETER MOECK, Department of Physics, Portland State University, Portland OR 97207-0751 & Oregon Nanoscience and Microtechnologies Institute, www.onami.us — Crystallographic image processing of atomic force and scanning tunneling microscopy [1] images from 2D periodic and preferentially highly symmetric calibration samples is demonstrated and leads to estimates of the prevailing point spread function of the microscopes. Such a point spread function is valid for one scanning probe tip at a time and the corresponding set of experimental conditions. It can subsequently be utilized to correct for all kinds of geometric distortions including the effects of a blunt scanning probe tip, image bow, and image tilt. The image to be corrected does not even need to possess 2D periodicity. The only condition is that it needs to be recorded with the same microscope under essentially the same experimental conditions and with the same scanning probe tip.

[1] P. Moeck, B. Moon Jr., M. Abdel-Hafiez, and M. Hietschold, Proc. NSTI 2009, Houston, May 3-7, 2009, Vol. I (2009) 314-317, (ISBN: 978-1-4398-1782-7).

Peter Moeck
Portland State University

Date submitted: 14 Sep 2009

Electronic form version 1.4