Abstract Submitted
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Detection of Nanomechanical Device Motion by Spatiotemporal Stroboscopic Interferometry[1] JOSEPH LOSBY, F. GIESEN, J. MOROZ, A. FRASER, Department of Physics, University of Alberta, M. BELOV, G. MCKINNON, Y. NING, Norcada Inc., Edmonton, Canada, W. HIEBERT, National Institute for Nanotechnology, Edmonton, Canada, M.R. FREEMAN, Department of Physics, University of Alberta and National Institute for Nanotechnology — Actuation and detection of nanomechanical device motion in the ultrahigh frequency regime remains a considerable challenge. We have performed broadband characterization of the displacement of silicon NEMS cantilevers and doubly-clamped beams by stroboscopic optical interferometric detection synchronized to pulsed electrostatic actuation. Initial test structures have yielded time-domain measurements of the response of structures having fundamental resonant frequencies up to 580 MHz. Calibration of the vertical displacement sensitivity and imaging of out-of-plane flexural modes will also be discussed. This study aims to extend the potential of interferometry for research on nanomechanical systems.

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