Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Atom interferometry, microscopy, complementarity, and the perfect lens[1] BARRY SANDERS, KARL-PETER MARZLIN, University of Calgary, PETER KNIGHT, Imperial College London — Development of the 'perfect lens' poses an interesting challenge to standard concepts of complementarity manifested in interferometric which-way vs fringe visibility experiments. We show that a 'microscope' with a 'perfect lens' provides the extremal point of maximum which-way information in atom interferometry, and our theory rigorously connects complementarity in interferometry with the standard position-momentum Heisenberg uncertainty relation.

[1]Supported by iCORE, CIAR, NSERC, and EPSRC

Barry Sanders
University of Calgary

Date submitted: 02 Feb 2007 Electronic form version 1.4