

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Dislocation Mobility in a Quantum Crystal: the Case of Solid ^4He MAURICE DE KONING, RENATO PESSOA, S. A. VITIELLO, UNICAMP, UNICAMP TEAM — We investigate the structure and mobility of dislocations in hcp ^4He crystals. In addition to fully characterizing the five elastic constants of this system, we obtain direct insight into dislocation core structures on the basal plane, which demonstrate a tendency toward dissociation into partial dislocations. Moreover, our results suggest that intrinsic lattice resistance is an essential factor in the mobility of these dislocations. This insight sheds new light on the possible correlation between dislocation mobility and the observed macroscopic behavior of crystalline ^4He .

Maurice de Koning
UNICAMP

Date submitted: 17 Nov 2009

Electronic form version 1.4