

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Mass Flux Measurements in Solid  $^4\text{He}$** <sup>1</sup> VALENTYN RUBANSKYI, YEGOR VEKHOV<sup>2</sup>, ROBERT HALLOCK, Univ of Mass - Amherst — There has been considerable attention given to solid helium over the past decade. Our approach to study the solid has been to sandwich solid helium between two reservoirs of superfluid helium. With this approach, we found and explored the characteristics of mass flux that takes place from one reservoir to the other<sup>3</sup>. We observed flow that has the characteristics of one-dimensional conductivity<sup>4</sup> and we have documented the effects that various concentrations of  $^3\text{He}$  impurity have on the temperature dependence of the flow<sup>5</sup>. These experiments continue and we will report on this work and new results that may be available.

<sup>1</sup>Supported by NSF via DMR 12-05217

<sup>2</sup>Current address: Department of Materials Science and Engineering, Univ. of Maryland, College Park, MD.

<sup>3</sup>M.W. Ray and R.B. Hallock, Phys. Rev. Letters 100, 235301 (2008); 105, 145301 (2010); Phys. Rev. B 79, 224302 (2009).

<sup>4</sup>Ye. Vekhov and R.B. Hallock, Phys. Rev. Letters 109, 045303 (2012); Phys. Rev. B 90, 134511 (2014).

<sup>5</sup>Ye. Vekhov, W.J. Mullin and Hallock, Phys. Rev. Letters 113, 035302 (2014); Ye. Vekhov and R.B. Hallock, Phys. Rev. B 92, 104509 (2015).

Robert Hallock  
Univ of Mass - Amherst

Date submitted: 06 Nov 2015

Electronic form version 1.4