Abstract Submitted
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Mass Flux Measurements in Solid 4He[1] VALENTYN RUBANSKYI, R.B. 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 previously found and explored the characteristics of mass flux that takes place from one reservoir to the other through the solid-filled experimental cell off the melting curve (1). We observed flow that has characteristics that appear to match expectations for one-dimensional conductivity (2) and we have documented the effects that various concentrations of 3He impurity have on the temperature dependence of the flow (3). These experiments continue and we expect to report on new results that may be available that are aimed at placing constraints on what carries the observed mass flux. (1) M.W. Ray and R.B. Hallock, Phys. Rev. Letters 100, 235301 (2008); 105, 145301 (2010); Phys. Rev. B 79, 224302 (2009). (2) Ye. Vekhov and R.B. Hallock, Phys. Rev. Letters 109, 045303 (2012); Phys. Rev. B 90, 134511 (2014). (3) 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).

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