Abstract Submitted
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Observation of Mass Flux through solid ^{4}He[1] ROBERT HALLOCK, MICHAEL RAY, Univ. of Mass. Amherst — We have developed a novel apparatus and technique that allows us to maintain an interface between superfluid helium and hcp solid ^{4}He at pressures greater than ≈ 25 bar, the low temperature solid-liquid coexistence pressure. We use this apparatus to inject helium into one side of the solid, creating a chemical potential difference across the solid, and we then look for a response in the pressure on the other side. We observe a flux of atoms through the solid[1] which tends to decrease with increasing solid pressure. There is also a complicated temperature dependence, which suggests hysteretic behavior. We will describe the experimental apparatus, and some of our results.

[1] M.W. Ray and R.B. Hallock Phys. Rev. Lett. **100** 235301 (2008)

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