Abstract Submitted
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Russell Donnelly's last legacy: Pursuing grid turbulence in superfluid ^{4}He[1] GARY IHAS, JIHEE YANG, University of Florida — Quantum turbulence, a tangle of quantized vortex lines in a superfluid, may hold significant keys to understanding all types of turbulence. Russell Donnelly pioneered this line of research, beginning with studies of grid turbulence probed by second sound.[2] The apparatus built by Russell and his students, with significant up-grades, is now being used at the University of Florida to continue his work on decaying grid turbulence in superfluid ^{4}He. The Oregon work used a 1cm wide square channel, while the Florida work has been in both 1 cm and 5 cm square channels. The larger channel allows detailed study of the increase in eddy size before saturation at the channel walls during the decay process. Power law fits of the turbulence decay in time allow comparison with theory, work intended to be Russell Donnelly's last experiment.

[1]Supported in part by US NSF #1007937.
[2]M. R. Smith, R. J. Donnelly, N. Goldenfeld, and W. F. Vinen, Phys. Rev. Lett. 71, 2583 (1993); S. R. Stalp, Ph.D. dissertation, University of Oregon (1998).

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