

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Finite-size effects on the thermal conductivity of ^4He confined in rectangular channels.¹ SERGEI JEREBETS, YUAN-MING LIU, FENG-CHUAN LIU, JPL, Pasadena, GUENTER AHLERS, Dept. of Physics and iQUEST, UC Santa Barbara — We report results for the thermal conductivity $\lambda(t)$ of ^4He confined in glass capillary arrays with rectangular channels of size $1 \times 10 \times 1000 \mu\text{m}^3$ near the bulk super-fluid transition temperature T_λ as a function of the reduced temperature $t \equiv T/T_\lambda - 1$. Even close to T_λ we found that $\lambda(t)$ differs very little from similar measurements for cylindrical channels of radius $1 \mu\text{m}$,² indicating similar scaling functions for the two geometries. This differs from the finite-size effects on thermodynamic properties, which have very different scaling functions near the transition for parallel-plate and cylindrical geometries.³

¹Supported by NASA Grant NAG3-2872

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Date submitted: 04 Dec 2004

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