Abstract Submitted
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Thermal Expansion measurements on single crystals of the superconductor MgB_2[1] JOHN J. NEUMEIER, R. BOLLINGER, C. A. M. DOS SANTOS, Montana State University, N. D. ZHIGADLO, JANUSZ KARPINSKI, Laboratory for Solid State Physics ETH Zürich — Thermal expansion measurements have been conducted along the a and c axes on single crystals of the superconductor MgB_2. The samples are platelets with typical thicknesses of 0.1 mm. The a axis lies in the plane of the platelets, this axis is typically 0.5 mm long. The measurements were conducted using a capacitive thermal expansion cell constructed entirely of fused silica; it is capable of detecting 0.1 $\mathring{A}$ changes in length. The results reveal that the linear thermal expansion $\Delta L/L = 21\text{x}10^{-4}$ and $5.2\text{x}10^{-4}$ along the c and a axes, respectively, in the temperature range 5 K < T < 300 K. At the superconducting transition temperature T_c, jumps in the thermal expansion coefficient α are observed to be positive along both axes. Regions where $\alpha < 0$ are observed along both axes. The results are in general agreement with recently published data [1] on polycrystalline MgB_2. [1] J. J. Neumeier, T. Tomita, M. Debassai, J. S. Schilling, P. W. Barnes, D. G. Hinks, and J. D. Jorgensen, Phys. Rev. B. Rapid Commun. December 2005.

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John Neumeier
Montana State University

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