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Anomalies in the bulk properties of single crystalline Niobium RICHARD K. BOLLINGER, J. J. NEUMEIER, B. D. WHITE, Montana State University, YOKO SUZUKI, A. MIGLIORI, JON BETTS, National High Magnetic Field Laboratory - Los Alamos National Laboratory, H. R. Z. SANDIM, C. A. M. DOS SANTOS, Escola de Engenharia de Lorena -USP — The thermodynamic properties of single crystal Niobium are presented. Anomalies in thermal expansion, specific heat, elastic constants, and electrical resistivity are observed. The linear coefficient of thermal expansion, α , exhibits a large, broad peak in the range 200 K < T < 280 K, with a nearly two-fold increase in α . The elastic constants show anomalies over a similar temperature range, while anomalies in heat capacity and resistivity are much narrower. This is surprising since crystalline Nb is a simple system, with only one naturally occurring isotope and a body centered cubic structure. Measurements on a second single crystal and on high purity polycrystalline Nb will also be presented.

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