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Temperature dependence of magnetization of hcp Gd A. CHERNYSHEV, V. PECHARSKY, K. GSCHNEIDNER, Department of Materials Science and Engineering, Iowa State University and Ames Laboratory, Ames, IA, 50011, V. ANTROPOV, Condensed Matter Physics, Ames Laboratory, Ames, IA, 50011 — Careful magnetization measurements of high purity Gd single crystal have been performed. Our results confirm a strong deviation from the Bloch law for the magnetization at low temperatures, and we demonstrate that this effect is even stronger than had been previously measured on less pure Gd samples. We have analyzed the physical nature of this deviation qualitatively and quantitatively using known theoretical models and the newly obtained results. However, no fully satisfactory agreement between the new experimental data and existing theories has been reached.

Vladimir Antropov
Ames Laboratory

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