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### Title

A NEUTRON-DIFFRACTION STUDY OF THE MAGNETIC-ORDERING IN SUPERCONDUCTING TMRH4B4 AND NDRH4B4

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DJ 9 A Neutron Diffraction Study of the Magnetic Ordering in Superconducting  $TmRh_2B_4$  and  $NdRh_2B_4$ .  
C.F. MAJKRZAK, G. SHIRANE, and S.K. SATIJA, Brookhaven Nat. Lab., \* H.A. MOOK, Oak Ridge Nat. Lab., † H.C. HAMAKER, ‡ H.B. MACKAY, § Z. FISK, ¶ and M.B. MAPLE, †† Univ. CA. San Diego. Measurements of the electrical resistance, heat capacity, thermal conductivity, and thermal expansion coefficient of the rare-earth rhodium borides  $TmRh_2B_4$  and  $NdRh_2B_4$  indicate that long-range magnetic order and superconductivity coexist in these compounds. We have performed neutron diffraction experiments which confirm that long-range antiferromagnetic order of the rare-earth ion sublattice develops in each compound in the superconducting state, in contrast to the reentrant behavior of  $ErRh_2B_4$ <sup>1,2</sup> where the onset of long-range ferromagnetic order at a temperature below that of the superconducting phase transition coincides with a return to the normal state.

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