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Fully gapped s-wave superconductivity in KOs_2O_6 I. BONALDE, R. RIBEIRO, W. BRAMER-ESCAMILLA, Centro de Física, IVIC, Apartado 21874, Caracas 1020-A, Venezuela, Z. HIROI, Y. YAMAURA, Institute for Solid State Physics, University of Tokio, Kashiwa, Chiba 277-8581, Japan — The discovery of superconductivity in the β-pyrochlore oxides AOs_2O_6 (A=Cs, Rb, and K) has attracted so much attention, because the geometric spin frustration inherent to their pyrochlore crystal structures is supposed to give rise to unconventional superconductivity via magnetic spin fluctuations. Until now experimental results suggest, however, that $CsOs_2O_6$ ($T_c = 3.3$ K) and $RbOs_2O_6$ ($T_c = 6.3$ K) are fully gapped s-wave superconductors. On the other hand, the experimental data of KOs_2O_6 ($T_c = 9.6$ K) show somewhat unusual behaviors, pointing out in some cases to unconventional superconductivity. In this talk we will discuss magnetic penetration depth data of single crystals of KOs_2O_6 down to 30 mK. The data clearly indicate that KOs_2O_6 is a fully single-gapped s-wave superconductor. This implies that all of the geometrically spin-frustrated compounds known until now respond as conventional superconductors, which would suggest that spin frustration does not lead to unconventional pairing as expected.

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