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Evolution of magnetic excitations in $BiCu_2PO_6$ observed via magnetic suppression of phonon heat conduction BYUNG-GU JEON, B. KOTESWARARAO, C.B. PARK, KEE HOON KIM, Seoul Natl. Univ., Korea, G.J. SHU, F.C. CHOU, Natl. Taiwan Univ., Taiwan, S.C. RIGGS, NHMFL, USA, S.B. CHUNG, IBS-CCES, Korea — We report the thermal conductivity of a frustrated spin ladder $BiCu_2PO_6$ under high magnetic field up to 30 T. At 0 T, strong suppression of the thermal conductivity is emerged around 15 K, leading a double-peak shape in the temperature-dependent thermal conductivity. Upon increasing the magnetic field, the suppression is further enhanced and shows a sharp dip in the magneto-thermal conductivity around the critical magnetic field. The anomalous, field-dependent thermal conductivity is interpreted as a resonance scattering of phononic heat carriers by magnetic excitations. From the analysis based on the transport theory, we successfully traced the magnetic field dependence of the magnetic excitation gaps up to 25 T.

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