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Anomalous Hall effect in antiferromagnetic GdPtBi TAKEHITO SUZUKI, ARAVIND DEVARAKONDA, YU-TING LIU, JOSEPH CHECKELSKY, Massachusetts Inst of Tech-MIT — The Berry phase of the electronic wave function is responsible for a transverse velocity of conducting carriers which results in anomalous Hall conductivity. This effect has been extensively investigated in ferromagnetic systems, but less is known in antiferromagnets. We have synthesized single crystals of GdPtBi, a metallic system which exhibits antiferromagnetic ordering below the transition temperature $T_N = 9$ K. We have investigated the electrical transport and magnetic properties of these crystals and found a distinct anomalous Hall effect response. We will discuss these observations in the context of the known mechanisms for anomalous velocity in ferromagnets and recent models unique to antiferromagnetic systems.

Takehito Suzuki
Massachusetts Inst of Tech-MIT

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