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Microscopic evidence of enhanced ferromagnetism in Cr/V doped (Bi,Sb)2Te3 thin films[1] WENBO WANG, Department of Physics and Astronomy, Rutgers University, Piscataway, New Jersey 08854, USA, YUNBO OU, CHANG LIU, YAYU WANG, KE HE, QI-KUN XUE, State Key Laboratory of Low Dimensional Quantum Physics, Department of Physics, Tsinghua University, Beijing 100084, China, WEIDA WU, Department of Physics and Astronomy, Rutgers University, Piscataway, New Jersey 08854, USA — Quantum anomalous Hall effect (QAHE) was experimentally realized in a ferromagnetic topological insulator Cr-doped $(Bi,Sb)_2Te_3$ (BST) thin film for the first time[1]. Recently, a more robust QAHE has been observed in V-doped BST thin films, which has a much larger coercive field and higher Curie temperature at the same doping level[2]. However, the quantization of Hall resistance in V-doped BST still occurs at extremely low temperature (¡ 150 mK). In order to further enhance the QAHE temperature, we co-doped BST thin films by both Cr and V. The co-doped samples show enhanced QAHE temperature, comparing to the end members. Our magnetic force microscopy (MFM) results reveal an improved ferromagnetism in the co-doped samples. This is consistent with the in-situ Hall measurements, which show a steeper magnetization reversal with enhanced Hall resistance. [1] C.-Z. Chang et al., Science 340, 167 (2013). [2] C.-Z. Chang et al., Nature Materials 14, 473477(2015).

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