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Enhanced Magnetic Proximity Effect at Ferromagnetic Insulator / Magnetic Topological Insulator Interface MINGDA LI, CUI-ZU CHANG, MIT, BRIAN KIRBY, NIST, MICHELLE E. JAMER, Northeastern University, WENPING CUI, Boston College, LIJUN WU, Boorkhaven National Lab, PENG WEI, MIT, YIMEI ZHU, Boorkhaven National Lab, DON HEIMAN, Northeastern University, JU LI, JAGADEESH MOODERA, MIT, MIT TEAM, NIST TEAM, NORTHEASTERN UNIVERSITY COLLABORATION, BOSTON COLLEGE COLLABORATION, BROOKHAVEN NATIONAL LAB COLLABORATION — Magnetic proximity effect at magnetic insulator / topological insulator interface provides a promising approach to realize low-dissipation quantum devices. However, the commonly used magnetic insulators have in-plane anisotropy hence cannot magnetize topological insulator. Here we report an enhancement of proximity exchange coupling in ferromagnetic insulator / magnetic topological insulator EuS / $Sb_{2-x}V_xTe_3$ hybrid heterostructure, where proximity effect is enhanced by a factor of 3 through the Vanadium doping. Moreover, an artificial antiferromagnetic-like structure is created between two strong ferromagnets, which may account for the proximity effect enhancement. The interplay between the proximity effect and doping in hybrid heterostructure provides insights into the engineering of magnetic ordering.

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