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Observation of Coulomb repulsion between Cu intercalants in $Cu_xBi_2Se_3$ CHRISTOPHER MANN, University of Texas at Austin, DAMIEN WEST, Rensselaer Polytechnic Institute, IRENEUSZ MIOTKOWSKI, YONG CHEN, Purdue University, SHENGBAI ZHANG, Rensselaer Polytechnic Institute, CHIH-KANG SHIH, University of Texas at Austin — Using scanning tunneling microscopy and *ab initio* simulations, we have identified several configurations for Cu-dopants in $Cu_xBi_2Se_3$, with Cu intercalants being the most abundant. Through statistical analysis, we show strong short-range repulsive interactions between Cu intercalants. At intermediate range (>5nm), the pair distribution function shows oscillatory structure along the <1 0 -1> directions which appears to be influenced by different diffusion barriers along the <1 0 -1> and <2 -1 -1> directions.

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