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**Bias Dependence of Tunneling Spin Injection into Graphene** TIANCONG ZHU, Ohio State Univ - Columbus, HUA WEN, WALID AMAMOU, ZHISHENG LIN, JING SHI, University of California, Riverside, ROLAND KAWAKAMI, Ohio State Univ - Columbus — Bias dependence of spin injection into a spin channel typically exhibits unusual behavior, which has been challenging to understand. In this study, we investigate the bias-dependence of tunneling spin injection into graphene with lateral spin-valve geometry. Co/MgO/Graphene is used as tunneling barrier contact and lock-in measurement is performed. By applying a DC bias to AC spin injection current, we observe a strong non-linearity of bias-dependent non-local voltage on both the electron and hole side of graphene. The non-local voltage also flips sign when a large negative DC bias is applied. We extracted the interfacial spin polarization as a function of DC bias. The data analysis suggests that the unusual behavior of bias-dependent tunneling spin injection in graphene is mainly due to the spin polarization changing at the ferromagnetic/graphene interface. To better understand this behavior, we also compare our data with several other existing models on bias-dependent spin injection.

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