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**Probing magnetic properties of sidewall epitaxial graphene nanoribbons** OWEN VAIL, JOHN HANKINSON, CHAO HUAN, WENLONG YU, RUI DONG, JAMES PALMER, MING RUAN, EDWARD CONRAD, Georgia Inst of Tech, CLAIRE BERGER, Gatech - School of Physics, CNRS-Institut Neel, WALTER DEHEER, ZHIGANG JIANG, Georgia Inst of Tech — Epitaxial graphene nanoribbons grown on sidewall SiC have recently emerged as a novel material system enabling single channel room temperature ballistic transport over micrometer distance. In this work, we study the tunnel magnetoresistance (TMR) of sidewall-ribbon-based magnetic tunnel junctions as a function of temperature and magnetic field (both amplitude and tilting angle). We show that the measured TMR exhibits a spin-switch behavior at temperatures below 30 K, indicating that the sidewall ribbons are magnetic and possess a spin component either parallel or antiparallel to the magnetization direction of the magnetic contact. Furthermore, we find that the TMR signal switches the sign at certain negative bias voltages, which has important implications in device applications.

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