

Abstract Submitted  
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**Electrical control of intervalley scattering via the charge state of defects**<sup>1</sup> BAOMING YAN, State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, Peking University, Collaborative Innovation Center of Quantum Matter, Beijing — We study the intervalley scattering in defected graphene by low-temperature transport measurements. The scattering rate is strongly suppressed when defects are charged. The finding highlights ‘screening’ of the short-range part of a potential by the long-range part. Experiments on calcium adsorbed graphene confirm the role of a long-range Coulomb potential. This effect is applicable to other multivalley systems, provided that the charge state of a defect can be electrically tuned. Our result provides a new means to electrically control valley relaxation and has important implications in valley dynamics in valleytronic materials.

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