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Investigating the quantum behavior of a graphene-based Josephson Junction JOSEPH LAMBERT, ZECHARIAH THRAILKILL, ROBERTO RAMOS, Drexel University — Recent experiments have demonstrated the Josephson effect in superconducting mesoscopic graphene devices consisting of two superconducting leads separated by a few hundred nanometers, contacted by single and multiple layers of graphene [1]. We report on the progress of low temperature experiments that study the temperature dependence of switching currents in this device. The motivation is to explore the presence of macroscopic quantum metastable states similar to those found in current-biased Josephson junctions. These states are interesting and have been used as basis states for superconducting qubits. [1] H.B. Heersche, P.D. Jarillo-Herrero, J.B. Oostinga, L.M.K. Vandersypen, and A.F.Morpurgo, Induced superconductivity in grapheme, Solid state communications, 143(1-2), 72-76 (2007)

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