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Magnetic Field Studies Near Superconducting Transition in MBE Grown Monolayer NbSe2 on Bilayer Graphene SEITA ONISHI, UC Berkeley/Lawrence Berkeley National Lab. (LBNL), MIGUEL M. UGEDA, UC Berkeley/CIC nanoGUNE, YI ZHANG, LBNL/SLAC National Accelrator Lab., YI CHEN, CLAUDIA OJEDA-ARISTIZABAL, UC Berkeley, HYEJIN RYU, SUNG-KWAN MO, ZAHID HUSSAIN, Lawrence Berkeley National Lab., ZHI-XUN SHEN, SLAC National Accelrator Lab./Stanford University, MICHAEL F. CROMMIE, ALEX ZETTL, UC Berkeley/Kavli ENSI/LBNL — Following the work by Frindt [1] on the superconductivity of NbSe2 at reduced thicknesses, recent breakthroughs have enabled the study of bilayers and monolayers. Staley et. al. [2], Tsen et. al. [3], Cao et. al. [4] and Xi et. al. [5] have studied superconductivity in bilayers and monolayers of NbSe2 after mechanical exfoliation and encapsulation with another layered material to protect from air. In this work, we have investigated the superconductivity in monolayer NbSe2 prepared by molecular beam epitaxy growth (MBE) on bilayer graphene (BLG) [6]. The superconducting transition has an onset temperature of 1.9K, midpoint temperature of 0.65K and reaches zero resistance at 0.46K. The upper critical field perpendicular to the NbSe2 monolayer is 0.5T at 100mK. We will show the effect of magnetic fields near the superconducting transition and compare with existing theories. [1] R. Frindt, Phys. Rev. Lett. 28, 299 (1972). [2] N. E. Staley, et. al., Phys. Rev. B 80, 184505 (2009). [3] A. W. Tsen, et. al., arXiv:1507.08639 [cond-Mat.supr-Con] 1 (2015). [4] Y. Cao, et. al., Nano Lett. 15, 4914 (2015). [5] X. Xi, et. al., arXiv:1507.08731 [cond-Mat.supr-Con] 1 (2015). [6] M. M. Ugeda, et al., Nat. Phys. 10.1038/nphys3527 (2015).

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