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Low - Frequency Noise in Graphene Transistors[1] GUANXIONG LIU, QINGHUI SHAO, DESALEGNE TEWELDEBRHAN, ALEXANDER BALANDIN, Nano-Device Laboratory, Electrical Engineering, University of California Riverside, Riverside, CA, SERGUEI ROUMYANTSEV, MICHAEL SHUR, Center for Integrated Electronics,Electrical,Computer and Systems Engineering,Rensselaer Polytechnic Institute,Troy,New York — We present the results of the experimental investigation of the low-frequency noise in three-terminal bilayer graphene devices. The quality of graphene layers has been verified with micro-Raman spectroscopy. Back-gated devices were fabricated using electron beam lithography and evaporation. The back-gate was used to adjust electrical conductivity through the graphene layer placed on top of Si/SiO_2 substrate. The charge neutrality point for examined devices was$\sim$10 V. The noise spectral density was rather low (on the order of $\sim$10E^{-23}–10E^{-22} A^2/Hz at frequency of 1 kHz).The noise reveals generation-recombination (G-R) bulges. Presence of G-R bulges and deviation from the 1/f spectrum suggest that the noise is of carrier-number fluctuation origin due to carrier trapping by defects [1].The low values of the low-frequency noise add validity to the proposed electronic applications of graphene. [1] Q. Shao et al., IEEE EDL (2008).

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