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**Tip Induced doping effects in the local tunnel spectra of graphene** ANJAN K. GUPTA, SHYAM K. CHOUDHARY, Physics Department, IIT Kanpur — We report on tip induced carrier density changes in local tunnel spectra of single layer graphene (SLG) with back-gate using room-temperature scanning tunneling microscopy (STM) and spectroscopy. The SLG samples, prepared by exfoliation method and verified by Raman spectra, show atomically resolved honeycomb lattice. Local tunnel spectra show two minima with the two moving in opposite directions along the bias axis. One minimum shows nearly a square-root dependence, and the other shows a linear dependence on the gate voltage. We understand these features as arising from the STM tip induced and bias voltage dependent change in carrier density in SLG. Other than the tip induced doping we also see the effect of charge inhomogeneity on the local tunnel spectra of SLG. The charge inhomogeneity is also seen in bilayer graphene but no new features due to tip induced doping are observed in the local spectra.

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