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**STM study of some strain induced Electronic Patterns on Graphite Surface** A. K. GUPTA, S. K. CHOUDHARY, Physics Department, Indian Institute of Technology, Kanpur-208016, INDIA — Abstract: We report on the STM observation of spatially varying super-lattice structures on (0001) graphite surface in a region confined by two straight carbon fibers. It varies from a hexagonal lattice of 6nm periodicity to nearly a square lattice of 13nm periodicity. It then changes into a one-dimensional fringe-like pattern before relaxing into a pattern-free region. Scanning on the surface gradually removes one fiber along its length and this shrinks the area of the super-lattice region. The boundary between 2-D lattice and 1-D fringes is found to be pinned to one end of this fiber and it moves as the fiber end recedes. We attribute this pattern to a spatially varying moirè rotation of one of the top layers giving rise to a spatially varying stacking pattern. This also affects the local density of electronic states near the surface as observed in the local tunneling spectra and the conductance imaging that we also report here. We have also successfully modeled this pattern using moirè rotation hypothesis with successful modeling of the 1-D fringes. In fact this new model gives much better insight into the large scale structure of such patterns.

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