

Abstract Submitted
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Nanotube in a Wigner crystal regime DMITRY NOVIKOV, Princeton University — A narrow-gap nanotube is studied close to half-filling, focussing on the effects of the curvature of the electronic dispersion controlled by the gap. Curvature couples charge and spin-valley $SU(4)$ "flavor" sectors, resulting, in particular, in the effects of commensuration. In the charge sector, the latter are manifest when the tube is subjected to a periodic external potential, in which case the Wigner crystal of electrons becomes locked into incompressible configurations. Commensuration in the flavor sector can be manifest in the presence of external magnetic field. In this case, commensurability between the densities of electrons with opposing spin polarizations results in the flavor ordering that could be revealed in magnetization measurements, when the Zeeman energy is larger than the renormalized gap at half-filling. Work supported by NSF MRSEC grant DMR 02-13706.

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