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Anisotropic Wigner crystal phases of two-dimensional electrons in high magnetic fields¹ F.D. KLIRONOMOS, University of Florida, A.M. ET-TOUHAMI, University of Florida, A.T. DORSEY, University of Florida — We study the collective states formed by a two-dimensional electron gas in the presence of a perpendicular magnetic field. We numerically solve the static (time-independent) Hartree-Fock (HF) equations projected onto a given Landau level of index $n \geq 2$. We find that a triangular isotropic Wigner crystal (WC) is favored at small values of the partial filling factor ν^* , but that at higher values of ν^* an anisotropic triangular WC becomes energetically more favorable. This anisotropic WC has a channel-like structure and can be viewed as a periodic arrangement of one-dimensional stacks of electron guiding centers that is reminiscent of the stripe state. Our results indicate that this “striped” state is the ground state of the system over a wider region of partial filling factors than predicted within previous HF treatments.

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Filippos Klironomos
University of Florida

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