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Spin and charge distribution symmetry dependence of stripe phases in two-dimensional electron systems confined to wide quantum wells YANG LIU, DOBROMIR KAMBUROV, MANSOUR SHAYEGAN, LOREN PFEIFFER, KEN WEST, KIRK BALDWIN, Dept Electrical Engineering, Princeton University — When a spin-split $N \leq 2$ Landau level is half filled, the two-dimensional electron system (2DES) is expected to break the rotational symmetry by forming a unidirectional charge density wave, the so-called stripe phase. The stripes are known to rotate from the "normal" ([110]) direction to the "abnormal" ([1$\bar{1}$0]) direction when the 2DES density is raised above a critical density. We report a study of the evolution of the stripe phase orientation near Landau level filling factors $\nu = 13/2$ and $15/2$ when E_F lies in the two, spin-split, $N = 2$ Landau levels of the symmetric subband (the S2$\uparrow$ and S2$\downarrow$ levels) while the $N = 0$ Landau levels of the antisymmetric subband are fully occupied. We find that when E_F lies in S2$\downarrow$ the stripes are always formed along the "normal" direction. But, when E_F lies in the S2$\uparrow$ level, the orientation of the stripes can rotate to be along the "abnormal" direction at high densities. At a density where the stripe phase at $\nu = 13/2$ is along the "abnormal" direction, we can rotate it back to the normal direction by making the charge distribution asymmetric while keeping the density fixed.

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