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**Reorientation of the Stripe Phase of 2D Electrons by a Minute Density Modulation**

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One of the most exotic manifestations of many-body interaction in nature is the formation of stripe phases. In such phases, instead of a homogeneous arrangement, electrons prefer to cluster and orient themselves in stripe-like structure and create a density modulation. Stripe phases are observed in strongly correlated systems which include the high-Tc superconductors, strontium ruthenate materials, and very clean two dimensional electron systems (2DESs). Amongst these, the quantum Hall stripe phase, observed in 2DESs, continues to be enigmatic despite years of research. Many of its fundamental properties, such as what determines the stripe orientation, and modulation period and strength are yet to be fully understood. Recently, there has been a surge of experimental studies focusing on the quantum Hall stripe phase. In relevance to this current interest, we report a novel method to probe the structure and energetics of the stripes by imposing a minute density modulation on the 2DES. The topic of our study is the parallel field ($B_{||}$)-induced quantum Hall stripe phase which typically orients itself perpendicular to the $B_{||}$'s direction. When a very small, periodic density modulation is introduced parallel to $B_{||}$, we find that the stripes also reorient parallel to $B_{||}$. The reorientation becomes most pronounced when the periods of the stripe phase and the external modulation are comparable. This phenomenon is remarkable since the external modulation amplitude is expected to be much smaller than that of the stripe phase and yet is sufficient to cause a reorientation. Our data thus suggest that the parallel and perpendicular orientations of the $B_{||}$-induced stripes must be energetically very close.