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Transport in Strained Graphene with Applied Magnetic Fields
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— Strain in graphene layers produces synthetic gauge fields that may be used to modify the properties of its electron system [1,2]. We study single layers of graphene transferred over Ti/Au electrical contacts on oxidized Si wafers with etched triangular holes in the oxide. The layers are strained by applying pressure either electrostatically from a gate voltage or hydrostatically from an external inert gas. We investigate electronic transport in this suspended variable-strain graphene system under applied magnetic fields and find that the device conductance is modulated by the external pressure [3] as well as by the Hall effect. We will discuss our latest results.

[1] Guinea, F., Katsnelson, M. I., Geim, A. K. Energy gaps and a zero-field quantum Hall effect in graphene by strain engineering. Nat. Phys. 6, 30-33 (2009).
[2] Levy, N., et al. Strain-induced pseudo–magnetic fields greater than 300 tesla in graphene nanobubbles. Science, 329 544-547 (2010).
[3] Smith, A. D., et al., Pressure sensors based on suspended graphene membranes. Solid-State Electron. 88, 89-94 (2013).

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