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Graphene with out-of-plane deformations and external magnetic fields[1] DAIARA FARIA, UERJ, RJ Brazil, RAMON CARRILLO BASTOS, Univ. Autonoma de Baja California, BC Mexico, FRANCISCO MIRELES, Univ. Nacional de Mexico, BC Mexico, ANDREA LATGE, Univ. Federal Fluminense, RJ Brazil, NANCY SANDLER, Ohio University, OH USA — Microscopic measurements in corrugated graphene have helped to elucidate how its electronic properties are affected in deformed regions, confirming the pseudomagnetic description for strained graphene. As the pseudofields reverse sign at each valley, an enhancement of the local density of states (LDOS) was found with broken sublattice symmetry in strained regions[1,2]. As a consequence, these systems have been proposed as a viable way to obtain valley filters. In graphene ribbons with a centrosymmetric deformation, the LDOS modification was predicted to be accompanied with a decrease in conductance, pointing to the presence of confined states [3]. To further characterize these states, we investigate the effect of strain in the presence of an external magnetic field, using a tight-binding model and recursive Greens function techniques. Anomalous conductance and DOS features are consistent with interpretation in terms of Fano resonances appearing for bound states in the continuum. We discuss the robustness of the sublattice asymmetry against the magnetic field and the possibility of exploring the valley separation in chosen spatial regions. [1]Mashoff et al. NanoLetters 10 (2010). [2]Schneider et al. 91 (2015). [3]Carrillo-Bastos et al. PRB 90 (2014).

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