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Magnetic field effects in bilayer graphene systems DANIEL AROVAS, University of California at San Diego, SRINIVAS RAGHU, TAYLOR HUGHES, Stanford University, ANDREI BERNEVIG, Princeton University — Recently, it has been shown that bilayer graphene systems display interesting electronic properties: examples include the quantum Hall effect with additional plateaus at zero hall conductivity, and electronic gaps tunable by a bias voltage. Here, we study an experimentally relevant problem of the effect of an external applied magnetic flux density on the bulk band structure and edge dynamics of bilayer graphene. We combine exact diagonalization studies with analytical transfer matrix methods and systematically study the quantized Hall conductivity, edge state structure, and possible topological phases of the system over a range of externally applied fields.

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