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## Hybrid Monte Carlo simulations of graphene in external magnetic field

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Recent experimental results [Nature Physics, 8 (2012) 550 and Nature 505 (2014) 528] indicate that graphene turns into insulator in sufficiently strong magnetic field. However, the exact nature of this state is still elusive and there are large discrepancies between theoretical predictions and experimental results.

To resolve this discrepancies extensive simulations of graphene in external magnetic field were performed using Hybrid Monte Carlo algorithm. Insulating state was observed in agreement with experiment. Mass gap and various order parameters were measured.

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