

From the Nature press release:

"Physics: Charge break-up in graphene"

"Researchers confirm that charge carriers in graphene interact strongly with each other and exhibit collective behaviour manifesting as fractions of an electron's elementary charge. Graphene is expected to find a range of applications in future electronics and these findings are important for understanding its complex physical properties."

"When charge carriers such as electrons are confined to moving in a two-dimensional plane and subject to a perpendicular magnetic field, they can form new quasi-particles with a fraction of the electron's elementary charge. This is known as the fractional quantum Hall effect FQHE. Graphene could be considered such a perfect two-dimensional system because the carbon atomic constituents are arranged in a single plane. Its charge carriers are remarkably mobile and have been predicted to interact strongly with each other. But firm evidence of collective behaviour such as the FQHE has been difficult to obtain."

"Eva Andrei and colleagues report the experimental observation of FQHE using devices containing suspended sheets of graphene probed in a two-terminal measurement set-up. Their approach removes disturbances from impurities that would normally obscure the effects of electron interactions, and may explain why previous searches have failed."