

Abstract Submitted
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The complete interpretation of the fractions in quantum Hall effect KESHAV SHRIVASTAVA, University of Malaya — We propose that the modified cyclotron energy is given by $(\hbar/2\pi)\omega_c(1/2)g(n+1/2)$ so that the fractional charge is given by the angular momentum with both signs of spin, $j = l \pm s$. In addition to the (i) principal fractions given by $(1/2)g$ our theory with effective charge $e^*=(1/2)ge$, has (ii) resonances at $\nu_1 - \nu_2$ and (iii) two-particle states at $\nu_1 + \nu_2$ and there are (iv) clusters with spin $>1/2$, where ν is a filling factor. This theory explains all of the 101 fractions and full graphene series. The fractional charges of graphene [2] are also explained. The series also explains the even denominators for $S=0,1,2, \dots$, as in electron clusters. The $S=0, L=0$, corresponds to half filled Landau level. $S=1/2, L=0$ with negative sign before s in j gives the zero-energy state. All of the predicted fractions agree with the data.

[1] K. N. Shrivastava, AIP Conf. Proc. 1150, 59-67 (2009).

[2] K. I. Bolotin, et al, Nature 462, 196(2009).

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