Abstract Submitted
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Interpretation of quantum Hall effect from angular momentum theory and Dirac equation.[1] KESHAV SHRIVASTAVA, University of Malaya — It is found that when suitable modifications to the g values are made, the effective charge of a particle is determined by e_{eff} =(1/2)ge, which enters in the Dirac equation to yield the fractional charges. The calculated values of the fractional charges agree with the data on fractional charge deduced from the quantum Hall effect. Therefore, the Dirac equation can accommodate not only particles of charges 0 and ± 1 but also fractional charges such as 1/3 and 2/3. This means that spin and charge get coupled. There are two g values for two signs of the spin. Hence 4 eigen values emerge, two for positive spin and two for negative spin. Therefore a 4x4 matrix has to be added to the eigen value E in the Dirac equation. This matrix has interesting anticommuting properties. K. N. Shrivastava, Phys. Lett. A 113,435-6(1986);115, 459(1986)(E). K. N. Shrivastava, Phys. Lett. A 326, 469-472(2004) K. N. Shrivastava, Mod. Phys. Lett. B 13, 1087-1090(1999); 14, 1009-1013(2000).

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