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On different mobilities in the low-field insulator-quantum Hall transition Z.-H. SUN, Department of Physics, NTU, Taipei, J.-Y. LIN, J.-H. CHEN, C.-T. LIANG, Y.F. CHEN, GIL-HO KIM, SAINT, SKKU, Suwon, Korea, D.H. YOUN, ETRI, Daejeon, C.M. JEON, Department of Materials Science and Engineering, Pohang University of Science and Technology, J.M. BAIK, J.-L. LEE, C.F. HUANG, NML, CMS/ITRI, Hsinchu — We report that the quantum mobility (determined from the Shubnikov-de Haas oscillations) can be much smaller than the Drude mobility (determined from the crossing point) when there exists an approximately temperature (T)-independent point in ρ_{xx} for which the corresponding Landau level filling factor $\nu \geq 3$ [1]. Moreover, recently it has been pointed out that the mobility can be renormalized and increases with increasing T [2]. Our experimental results, together with the seminal paper [2] strongly suggest that different mobilities should be considered in the low-field insulator-quantum Hall (I-QH) transition. Most importantly, corrections to the argument raised by Huckestein must be made to obtain a correct insight into the direct low-field I-QH transition [1].

[1] B Huckestein, PRL 81, 3141 (2000) and references therein.

[2] G M Minkov et al., PRB 74, 045314 (2006).

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