

Abstract Submitted
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Examining the Influence of Alloy Disorder on the $\nu = 7/3$ Fractional Quantum Hall State ETHAN KLEINBAUM, NIANPEI DENG, GEOFFREY GARDNER, MICHAEL MANFRA, GABOR CSATHY, Purdue University — The fractional quantum Hall states of the second Landau level elicit interest from their potential to realize novel many-body ground states. In addition to the notable even denominator FQHSs, the odd denominator states in this region are worthy of considerable attention. Specifically, the nature of the most prominent odd denominator state, $\nu = 7/3$, remains unknown – admitting both the conventional Laughlin-Jain state and more exotic candidate states. We examine the $\nu = 7/3$ state in a series of samples with alloy disorder intentionally added during MBE growth. In these samples, we measure the energy gap at $\nu = 7/3$ to explore the influence of disorder on the $\nu = 7/3$ FQHS. A comparison of these data to the energy gap measurements of the even denominator $\nu = 5/2$. This work was supported by DOE DE-SC000671.

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