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Disordered Pinned Anyons in Two Dimensions CHRIS LAUMANN, Harvard University, DAVID HUSE, Princeton University, ANDREAS LUDWIG, UCSB, GIL REFAEL, Caltech, SIMON TREBST, UCSB, MATTHIAS TROYER, ETH Zurich — We consider the effect of disorder on the behavior of pinned anyons in two spatial dimensions. Within an approximate numerical strong disorder renormalization group (SDRG) treatment, we find that both Fibonacci and Majorana anyons exhibit flows back to weaker disorder rather than toward infinite randomness phases such as those they exhibit in $d=1$. Restricting to the technically simpler Majorana anyons, we map out the effects of sign and coupling strength disorder on the proposed translation invariant topological liquid found in the absence of disorder. In disordered Hall bars, the nature of this descendant phase, and in particular its localization properties, may be relevant to the interpretation of transport and non-Abelian interferometry.

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