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Dynamical manipulation of 2D topological insulator edge states for Majorana fermion braiding[1] SHU-PING LEE, JASON ALICEA, caltech — Edge states of 2D topological insulators such as HgTe provide a promising platform for realizing Majorana modes. Networks required for braiding Majoranas along the edge channels can be obtained by adjoining HgTe quantum wells to form corner junctions. Physically cutting quantum wells for this purpose, however, presents technical challenges. Here we propose a more accessible means of forming networks that relies on dynamically manipulating the location of edge states inside of a *single* HgTe sheet. In particular, we show that edge states can effectively be dragged into the system's interior by gating a region near the edge into a metallic regime and then removing the resulting gapless carriers via proximity-induced superconductivity. This method allows one to construct rather general quasi-1D networks along which Majorana modes can be shuttled and exchanged by electrostatic means.

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