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Chain of Majorana States from Superconducting Dirac Fermions at a Magnetic DomainWall TITUS NEUPERT, Condensed Matter Theory Group, Paul Scherrer Institute, CH-5232 Villigen PSI, Switzerland, SHIGEKI ONODA, AKIRA FURUSAKI, Condensed Matter Theory Laboratory, RIKEN, Wako, Saitama 351-0198, Japan — We study theoretically a strongly type-II s-wave superconducting state of two-dimensional Dirac fermions in proximity to a ferromagnet having in-plane magnetization. It is shown that a magnetic domain wall can host a chain of equally spaced vortices in the superconducting order parameter, each of which binds a Majorana-fermion state. The overlap integral of neighboring Majorana states is sensitive to the position of the chemical potential of the Dirac fermions. Thermal transport and scanning tunneling microscopy experiments to probe the Majorana fermions are discussed.

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