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Majorana fermion from weak topological superconductivity: application to SrTiO₃ and KTaO₃ SUK BUM CHUNG, Seoul Natl Univ, CHEUNG CHAN, HONG YAO, Institute for Advanced Study, Tsinghua University — Much of the current experimental efforts for detecting Majorana zero modes centered on probing the boundary of quantum wires with strong spin-orbit coupling. It is possible to realize the same type of Majorana zero mode at crystalline dislocation in the 2D superconductor, which has non-zero weak topological indices. Unlike at an Abrikosov vortex, at such a dislocation, there will not be midgap states other than the Majorana zero mode that can complicate the experimental detection. We will show that, using the anisotropic dispersion of the Ti / Ta t_{2g} orbitals, such a weak topological superconductivity can be realized when the surface 2DEG of SrTiO₃ or KTaO₃ becomes superconducting.

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