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Surface Majorana modes in ultra-cold fermion systems with unconventional Cooper pairings YI LI, CONGJUN WU, Department of Physics, University of California, San Diego — The rapid progress of dipolar fermions provides a new opportunity to investigate unconventional Cooper pairings and exotic topological properties. We study the zero energy modes for the single and multiple-component dipolar gases along the surface perpendicular to the z-direction, which are a flat band of Majorana fermions. Under time-reversal symmetry breaking perturbations, such as vortices, the degeneracy of the surface Majorana modes is lifted. We also investigated the spontaneous time-reversal symmetry breaking effect in such systems.

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