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Coupled wire model of symmetric Majorana surfaces of topological superconductors II: 32-fold periodic topological orders ZHAO ZHANG, SHARMISTHA SAHOO, JEFFREY TEO, University of Virginia — We mimic the massless surface Majorana's of topological superconductors by coupled wire models in two spatial dimensions, and introduce many-body gapping interactions that preserve time reversal symmetry. Coupling with a Z_2 gauge theory, the symmetric gapped surface generically carries a non-trivial G_N topological order, where N is the number of Majorana species and G_N is some $SO(r)_1$ or $SO(3)_3$-like topological state. These form a 32-fold periodic class $G_N \cong G_{N+32}$, and a Z_{32} *relative* tensor product structure $G_{N_1} \otimes_b G_{N_2} \cong G_{N_1+N_2}$ by anyon condensation. We present the anyon structures of these topological states, and understand the topological orders through bulk-boundary correspondence and the Wilson structures on a torus geometry.

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