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Entanglement entropy of bilinear fermionic systems LETIAN DING, NOAH BRAY-ALI, STEPHAN HAAS, Department of Physics and Astronomy, University of Southern California — We work out a bound of the block entropy S_L for systems of spinless fermions with generic, bilinear interactions. Experimentally relevant examples include p-wave superconductors and cold atom gases near a Feshbach resonance. We find that the block entropy does *not* obey an area law $S_L \sim cL^{d-1}$ law whenever the system has a $d-1$ dimensional surface of gapless excitations. For other systems, such as a p-wave superconductor with Fermi points, the block entropy does obey the area law, but with a coefficient that diverges as the gap closes.

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