Bell non-local correlations from Majorana end-points

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Entanglement in quantum mechanics contradicts local realism and is a manifestation of quantum non-locality. Its presence can be detected through the violation of Bell, or the Clauser-Horne-Shimony-Holt (CHSH) inequalities. Paradigmatic quantum systems provide examples of both non-entangled and entangled states. Here we consider a minimal complexity setup consisting of 6 Majorana bound states. We find that any allowed state in the degenerate Majorana space is non-locally entangled. We show how to measure the CHSH-violating correlations in a semiconductor-wire based setup.