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and their applications from gauge/gravity dualities to statistical mechanics and quantum information

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U(1) entanglement asymmetry in the Ising CFT via non-topological defects

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The entanglement asymmetry quantifies how much a given state is far from being invariant under a certain group. If studied in the ground state of a system, it quantifies how much the system breaks (either explicitly or spontaneously) a given symmetry group. Formulated in the modern language, symmetries of a QFT are implemented by topological defects and, accordingly, the entanglement asymmetry quantifies how much such defects are not topological. We study the $U(1)$ entanglement asymmetry in the ground state of the Ising CFT. This boils down to the computation of the ground state energy of the Majorana theory on a circle with defects that couple the left and right chiral components. The resulting asymmetry matches with the universal subleading term that is numerically accessible on the lattice.

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