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## Decoherence effects in entangled fermion pairs at colliders

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Recent measurements at the Large Hadron Collider have observed entanglement in the spins of  $t\bar{t}$  pairs. The effects of radiation, which are expected to lead to quantum decoherence and a reduction of entanglement, are generally neglected in such measurements. In this work we calculate the effects of decoherence from various different types of radiation for a maximally entangled pair of fermions – a bipartite system of qubits in a Bell state. We identify the Kraus operators describing the evolution of the open quantum system with the integrated Altarelli-Parisi splitting functions.

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