

Performing foundational quantum tests with Higgs bosons

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Decays of Higgs bosons produce pairs of vector bosons in highly entangled states - near-perfect Bell states. In the language of quantum information theory the pair of spin-1 W and Z bosons is a bipartite system of two qutrits. The chiral decays of the W and Z permit measurement of the full bipartite spin-density matrix, allowing the LHC experiments to perform quantum state tomography, entanglement measurements even perhaps Bell inequality tests.

Alternate track

1. Formal Theory

I read the instructions above

Yes

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