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Entangled Fields in Multiple Cavities by Interaction with One Three-Level Atom

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Abstract: We present a scheme to entangle fields in multiple cavities. Our scheme is based on the resonant interaction of a Ξ-type three-level atom with the cavity fields for precalculated interaction time, which enables us to generate a quantum entangled Greenberger-Horn-Zeilinger (GHZ) state of fields in multiple cavities. In principle, the scheme can be also generalized to generate N-party GHZ state. The required experimental techniques are within the scope of what can be obtained in the microwave cavity QED set up.

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