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Title:	Experimental construction of a W superposition state and its equivalence to the Greenberger-Horne-Zeilinger state under local filtration
Authors:	Das, Debmalya (/jspui/browse?type=author&value=Das%2C+Debmalya) Dogra, S. (/jspui/browse?type=author&value=Dogra%2C+S.) Dorai, K. (/jspui/browse?type=author&value=Dorai%2C+K.) Arvind (/jspui/browse?type=author&value=Arvind)
Keywords:	W superposition Greenberger-Horne-Zeilinger state ancilla qubits
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Abstract:	We experimentally construct a three-qubit entangled W superposition (W state) on an NMR quantum information processor. We give a measurement-based filtration protocol for the invertible local operation (ILO) that converts the W state to the Greenberger-Horne-Zeilinger (GHZ) state, using a register of three ancilla qubits. Further we implement an experimental protocol to reconstruct full information about the three-party W state using only two-party reduced density matrices. An intriguing fact unearthed recently is that the W state, which is equivalent to the GHZ state under an ILO, is in fact reconstructible from its two-party reduced density matrices, unlike the GHZ state. We hence demonstrate that, although the W state is interconvertible with the GHZ state, it stores entanglement very differently.
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