

Abstract Submitted  
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**Cartan Involutions in Quantum Information** PETER LOVE, Haverford College — We discuss some applications of Cartan decompositions and the corresponding involutions of the unitary group in quantum information theory. Recently, such involutions were used to obtain a constructive quantum Shannon decomposition with an application to quantum circuits. We will discuss some practical aspects of the use of this decomposition to obtain circuits for arbitrary unitary matrices. We discuss further applications of these techniques to the computation of mixed state entanglement and the parameterization of quantum operations on open systems.

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