Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Methods for entanglement in circuit QED FELIX MOTZOI, MOHAN SAROVAR, UC Berkeley, MICHAEL GOERZ, CHRISTIANE KOCH, U. Kassel, BIRGITTA WHALEY, UC Berkeley — We discuss some progress in methods of generating entanglement in superconducting qubit architectures. We focus on the minimal time required to generate a perfect entangler in a given system, specifically by combining simultaneously multiple given forms of coupling. Typically the different terms will generate different dynamics and when multiple coupling terms exist one will have a choice about which local equivalence class to use to generate entanglement. Here, we consider the case where we want to simultaneously include the different forms of coupling that will be present in the circuit QED system, such as direct coupling, cavity mediated coupling, or virtual transitions in the multiqubit space, with similar interaction strengths. No specific gate is targeted, but rather entanglement generation is optimized. Incoherent effects such as measurement/feedback based control can also be included to generate entanglement, even when the qubits are spatially separated (i.e. in different cavities) and no interaction exists.

Felix Motzoi
UC Berkeley

Date submitted: 08 Nov 2012 Electronic form version 1.4