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Generating entanglement by measurement in circuit QED JAY GAMBETTA, CHANTAL HUTCHISON, University of Waterloo, ALEXANDRE BLAIS, Universite de Sherbrooke, FRANK WILHELM, University of Waterloo — In this talk, I will show theoretically how to induce entanglement by measurement in circuit QED. I will use quantum trajectory theory to derive an equation for the conditional state of a two qubit system, conditioned on continuous-in-time measurement of the amplitude and phase of the field leaving the resonator. I will show that with experimental parameters, we can use a decoherence-free subspace to generate an entangled state with a high concurrence and with a success probability of $1/2$. Finally I will show that with a simple feedback scheme the same concurrence can be achieved with a success probability of one.

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