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Circuit QED with phase-biased qubits JEROME BOURASSA, ALEXANDRE BLAIS, Universite de Sherbrooke, MICHEL DEVORET, ROBERT SCHOELKOPF, Yale University, YALE CIRCUIT QED TEAM — Coupling of a superconducing charge qubit to a transmission line resonator has been shown to lead to the very strong coupling regime of cavity qubit [1]. In this talk, we will discuss an alternative approach to circuit QED based on the cavity bifurcation amplifier [2] and where a qubit is directly embedded in the resonator's center line. We will show that this type of phase bias leads to very strong coupling and/or non-linearities. Readout, decoherence rates and coupling of qubits in this architecture will be discussed. [1] A. Wallraff et al., Nature 431, 162 (2004). [2] M. Metcalfe et al., PRB 76, 174516 (2007).

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