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Inverse Landau-Zener-Stuckelberg interferometry for the measurement of a resonator's state using a qubit SERGEY SHEVCHENKO, B. Verkin Institute for Low Temperature Physics and Engineering, Kharkov, Ukraine, SAHEL ASHHAB, FRANCO NORI, RIKEN Advanced Science Institute, Wako-shi, Saitama, Japan; Department of Physics, The University of Michigan, Ann Arbor, Michigan, USA — We consider theoretically a superconducting qubit - nanomechanical resonator system, which was realized recently by LaHaye et al. [Nature 459, 960 (2009)]. We formulate and solve the inverse Landau-Zener-Stuckelberg problem, where we assume the driven qubit's state to be known (i.e. measured by some other device) and aim to find the parameters of the qubit's Hamiltonian. In particular, for our system the qubit's bias is defined by the nanomechanical resonator's displacement. This may provide a tool for monitoring the nanomechanical resonator 's position. [S. N. Shevchenko, S. Ashhab, and F. Nori, Phys. Rev. B 85, 094502 (2012).]

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