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Electromagnetically induced acoustic transparency amplifier using a superconducting transmon circuit

We present a scheme for the amplification of electromagnetically induced acoustic transparency (EIAT) in a superconducting transmon circuit. Recently, EIAT has been demonstrated experimentally in a three-level ladder-type superconducting artificial atom [G Andersson et al, Phys. Rev. Lett. 124, 240 402 (2020)]. In this experiment, the authors have noticed only 20% transmission of surface acoustic waves (SAW) due to limited linewidth of the EIT window. Here we utilize an additional microwave field to enhance the transmission of SAW. This additional field increases the coherence in the second excited state which causes the amplification in transmission and the reduction in corresponding group velocity is achieved.

Abstract category

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