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Oscillations in a Landau-Zener Transition GUOZHU SUN, Research Institute of Superconductor Electronics, School of Electronic Science and Engineering, Nanjing University, XUEDA WEN, Department of Physics, University of Illinois at Urbana-Champaign, JIAN CHEN, LIN KANG, PEIHENG WU, Research Institute of Superconductor Electronics, School of Electronic Science and Engineering, Nanjing University, SIYUAN HAN, Department of Physics and Astronomy, University of Kansas — Landau-Zener transition has been explored in varieties of systems and becoming more and more applicable especially in the developing quantum information processing. But the effects of finite sweeping range in the vicinity of an avoided energy-level crossing is lack of experimental evidence. Here we experimentally proved the inapplicability of the Landau-Zener formula in the vicinity of an avoided energy-level crossing and demonstrated two anomalous oscillations in the Landau-Zener transition, which agree well with the numerical simulations. Our results not only provide a closer view of Landau-Zener transition but also shed light on its application in the quantum state manipulation.

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