

Abstract Submitted
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Parametrically driven field emission in strongly nonlinear coupled electron-shuttles CHULKI KIM, KIST, MARTA PRADA, University of Hamburg, GLORIA PLATERO, ICMM-CSIC, MINAH SEO, TAIKJIN LEE, JAE HUN KIM, SEOK LEE, KIST, ROBERT BLICK, University of Hamburg — The transition of coupled electron shuttles from a stable to a strongly nonlinear response is demonstrated at room temperature. The electron transport is Coulomb-controlled at low voltages but changes to the conventional field emission in this transition. This reversible process forms a well-defined band within a broad frequency range in the parameter space. Both the experimental data and numerical calculations indicate that the source of the nonlinearity is provided by the electromechanical coupling. The increased current in the nonlinear regime has the potential to form the basis for energy harvesting via nanomechanical shuttles.

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