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The transition towards chaos in a coupled nanoelectromechanical system CHULKI KIM, JONGHOO PARK, ROBERT BLICK, University of Wisconsin-Madison — The coupling between electron transport and mechanical motion of nano-structures has been studied since the electron shuttling system was suggested by Gorelik. Here we demonstrate how coupled nanopillars can be driven into the limit of chaotic response. This novel structure is investigated under AC excitation superimposed on a DC bias. The linear mechanical response evolves into Arnold tongues under a strong AC drive. Beyond a critical point, we observe chaotic behavior in the response.

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