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Charge Oscillations in Quantum Dots ALESSANDRO SILVA, Department of Physics and Astronomy, Rutgers University, Piscataway NJ 08854, MICHAEL SINDEL, Physics Department and Center for Nanoscience, LMU Munchen, 80333 Munchen, Germany, YUVAL OREG, Department of Condensed Matter Physics, The Weizmann Institute of Science, 76100 Rehovot, Israel, JAN VON DELFT, Physics Department and Center for Nanoscience, LMU Munchen, 80333 Munchen, Germany — We analyze the local level occupation of a spinless, interacting two-level quantum dot coupled to two leads by means of Wilson's numerical renormalization group. A gate voltage sweep, causing a rearrangement of the charge such that the system's energy is minimized, leads to oscillations, and sometimes even inversions, in the level occupations. We find that these oscillations, qualitatively understandable by a simple Hartree analysis, are generic and occur in a wide range of system parameters. By allowing a relative sign in one tunnelling matrix element between dot and leads, we extend our findings to more generic models.

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