

Abstract Submitted  
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**Spatially resolved manipulation of single electrons in quantum dots using a scanned probe** ALESSANDRO PIODA, SLAVO KICIN, THOMAS IHN, MARTIN SIGRIST, ANDREAS FUHRER, KLAUS ENSSLIN, ETH Zurich, ANDREAS WEICHELBAUM, SERGIO ULLOA, Ohio University, MATTHIAS REINWALD, WERNER WEGSCHEIDER, University of Regensburg — Single electrons in a quantum dot have been manipulated with a scanning force microscope. The scanning metallic tip was coupled capacitively to the electrons confined in a lithographically defined gate-tunable quantum dot at a temperature of 300 mK. Single electrons were made to hop on or off the dot by moving the tip or by changing the tip bias voltage owing to the Coulomb-blockade effect. Spatial images of conductance resonances map the interaction potential between the tip and individual electronic quantum dot states. Under certain conditions this interaction is found to contain a tip-voltage induced and a tip-voltage independent contribution. Alessandro Pioda, Slavo Kicin, Thomas Ihn, Martin Sigrist, Andreas Fuhrer, Klaus Ensslin, Andreas Weichselbaum, Sergio E. Ulloa, Matthias Reinwald and Werner Wegscheider, *Phys. Rev. Lett.* 93, 216801 (2004), cond-mat/0411264

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