## Abstract Submitted for the MAR12 Meeting of The American Physical Society

Electrostatic modulation of periodic potentials in a twodimensional electron gas: from antidot lattice to quantum dot lattice SRIJIT GOSWAMI, MOHAMMAD ALI AAMIR, SAQUIB SHAMIM, Department of Physics, Indian Institute of Science, CHRISTOPH SIEGERT, Cavendish Laboratory, University of Cambridge, MICHAEL PEPPER, Department of Electronic and Electrical Engineering, University College London, IAN FARRER, DAVID RITCHIE, Cavendish Laboratory, University of Cambridge, ARINDAM GHOSH, Department of Physics, Indian Institute of Science — We use a dual gated device structure to introduce a gate-tunable periodic potential in a GaAs/AlGaAs two dimensional electron gas (2DEG). Using a suitable choice of gate voltages we can controllably alter the potential landscape in the 2DEG, thereby inducing either a periodic array of antidots or quantum dots. Antidots are artificial scattering centers, and therefore allow for a study of electron dynamics. On the other hand, a quantum dot lattice provides the opportunity to study correlated electron physics. We use a variety of electrical measurements such as magneto-resistance, thermo-voltage and current-voltage characteristics to probe these two contrasting regimes.

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