
Reconstructing the potential configuration in a high-mobility semiconductor heterostructure with scanning gate microscopy

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Résumé

The weak disorder potential seen by the electrons of a two-dimensional electron gas in high-mobility semiconductor heterostructures leads to fluctuations in the physical properties and can be an issue for nanodevices. We show that a scanning gate microscopy (SGM) image contains information about the disorder potential, and that a machine learning approach based on SGM data can be used to determine the disorder. We reconstruct the electric potential of a sample from its experimental SGM data and validate the result through an estimate of its accuracy. (1) (1) G. J. Percebois, A. Lacerda-Santos, B. Brun, B. Hackens, X. Waintal, D. Weinmann, arXiv:2308.13372 (2023)

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