

Abstract Submitted
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The nonlinear effect of resistive inhomogeneities on van der Pauw measurements DANIEL W. KOON, St. Lawrence University — The *resistive weighting function* [D. W. Koon and C. J. Knickerbocker, Rev. Sci. Instrum. 63, 207 (1992)] quantifies the effect of small local inhomogeneities on van der Pauw resistivity measurements, but assumes such effects to be linear. This talk will describe deviations from linearity for a square van der Pauw geometry, modeled using a 5 x 5 grid network of discrete resistors and introducing both positive and negative perturbations to local resistors, covering nearly two orders of magnitude in $-\Delta\rho/\rho$ or $-\Delta\sigma/\sigma$. While there is a relatively modest quadratic nonlinearity for inhomogeneities of decreasing conductivity, the nonlinear term for inhomogeneities of decreasing resistivity is approximately cubic and can exceed the linear term.

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