Abstract Submitted
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Nonlinearity in the effect of an inhomogeneous Hall angle DANIEL W. KOON, St. Lawrence University — The differential equation for the electric potential in a conducting material with an inhomogeneous Hall angle is extended to the large-field limit. This equation is solved for a square specimen, using a successive over-relaxation [SOR] technique for matrices of up to 101x101 size, and the Hall weighting function −− the effect of local pointlike perturbations on the measured Hall angle – is calculated as both the unperturbed Hall angle, $\tan\Theta_H$, and the perturbation, $\delta\tan\Theta_H$, exceed the linear, small angle limit. Preliminary results show that the Hall angle varies by no more than 5% if both $|\tan\Theta_H| < 1$ and $|\delta\tan\Theta_H| < 1$. Thus, previously calculated results for the Hall weighting function can be used for most materials in all but the most extreme magnetic fields.

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