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Analytical Procedure for Measuring Electrical Resistivity of Anisotropic Materials C.A.M. DOS SANTOS, B.S. DE LIMA, C.Y. SHIGUE, Escola de Engenharia de Lorena - USP, Lorena-SP, Brazil, A. DE CAMPOS, M.S. DA LUZ, A.T. RICE, B.D. WHITE, J.J. NEUMEIER, Department of Physics - MSU, Bozeman-MT, USA — The Montgomery method is used to determine the resistivity tensor of anisotropic materials [1] such as high-T_C and FeAs superconductors, 2-layer Mn oxides, organic conductors, and quasi-1D conductors. It uses the Wasscher transformation [2], which calculates an isotropic equivalent sample of the anisotropic sample. This is a timing-consuming task because it is a numerical method based upon graphical analyses obtained from calculations by Logan, Rice, and Wick [3]. In this work we report a simplification of the Montgomery method. Analytical equations are derived and applied to several isotropic and anisotropic samples (Cu, Al, $Bi_2Sr_2CaCu_2O_{8+\delta}$, Graphite, $SrNbO_x$, γ-Mo_4O_{11}). Comparisons with results obtained by using the standard four-probe method demonstrate the quality and simplicity of the procedure, which can easily be extended to data acquisition systems. This material is based upon work supported by FAPESP (grant No. 07-04572-8), NSF (grants Nos. DMR-0504769 and 0552458), and CNPq (grant Nos. 301334/2007-2 and 201439/2007-7). [1] H. C. Montgomery, J. Appl. Phys. **42**, 2971 (1971). [2] J. D. Wasscher, Philips Res. Repts. **16**, 301 (1961). [3] B. F. Logan, S. O. Rice, and R. F. Wick, J. Appl. Phys. **42**, 2975 (1971).

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