

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Giant piezoresistance in silicon/metal hybrid resistors¹ ALISTAIR ROWE, Ecole Polytechnique, CNRS — We report a giant room temperature piezoresistance in planar metal/semiconductor hybrid resistors fabricated from Aluminum and Silicon, with gauge factors ~ 1000 for strains up to 10^{-5} . This new effect [1] is shown to be due to the geometric arrangement of the metal and the semiconductor, and results from a stress induced redirection of the injected current from the metallic shunt into the semiconductor. Since there is a large difference in the electrical conductivity of these materials, this yields a large increase in the device resistance. This “extraordinary piezoconductance” will be compared and contrasted with the extraordinary magnetoresistance previously observed in metal/semiconductor hybrid resistors.

[1] A.C.H. Rowe et al., Phys. Rev. Lett. 100, 145501 (2008)

¹The authors thank the Agence Nationale de la Recherche for financial support (ANR-06-NANO-037).

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Date submitted: 04 Nov 2009

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