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**Two-contact and four-contact magnetoresistance in InSb / Au hybrid structures.** E. A. WARD, Virginia Polytechnic Institute and State University, HONG CHEN, University of North Florida, J. J. HEREMANS, Virginia Polytechnic Institute and State University — We present magnetoresistance measurements on hybrid InSb-Au structures in two-contact and four-contact configurations. Large geometrical magnetoresistances in InSb-Au structures are enabled by the high electron mobility, and hence large Hall angle, in InSb and by the difference in conductivity between semiconductors and metals. InSb / metal hybrid magnetoresistors have attracted attention for applications in data storage and sensing, where a two-contact geometry is appealing. Our geometries consist of mm-sized thin-film InSb bar mesas paralleled by Au shunts, fabricated by lithographic techniques. The four-contact magnetoresistances are experimentally observed to be substantially higher (up to 8000 perc. at a magnetic field of 1 T, at 6 K and at an InSb mobility 40,000 cm<sup>2</sup>/Vs) than the two-contact magnetoresistances (average 80 perc.) over the temperature range studied. The two-contact magnetoresistances further stay short of the Corbino limit. Effects of the hybrid structure are evident however: for two-contact magnetoresistances at 1 T, an absence of Au shunts in otherwise equivalent geometries leads to magnetoresistances of about 15 perc., one-sided shunts result in about 70 perc., and two-sided shunts in about 140 perc. (NSF DMR-0618235).

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