

Abstract Submitted
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Combined study of microwave-power-dependence and linear-polarization-dependence of the microwave-radiation-induced magnetoresistance oscillations¹ TIANYU YE, HAN-CHUN LIU, RAMESH MANI, Georgia State University, WERNER WEGSCHEIDER, ETH Zurich , GEORGIA STATE UNIVERSITY COLLABORATION, ETH ZURICH COLLABORATION — Microwave radiation induced magnetoresistance oscillations (MRIMOs) represent an interesting electrical property of the high mobility two dimensional electron gas (2DEG) at low temperatures in a perpendicular magnetic field and under microwave excitation. Some questions under discussion in this topic include: (a) whether MRIMOs' amplitudes grow linearly with the microwave power and (b) how the MRIMO amplitudes change with the rotation of the microwave polarization with respect to the sample. In this study, we utilize swept microwave power and continuously changed linear polarized microwave polarization angle as two variables in four-terminal low-frequency lock-in magnetoresistance measurements of the 2DEG samples. The results show that amplitude of MRIMOs varies non-linearly with the microwave power. Also, the microwave polarization dependence measurements show that MRIMOs depend sensitively on the polarization angle of the linearly polarized microwaves, while the oscillatory magnetoresistance follows a cosine square function of the polarization angle. We provide a simple model that conveys our understanding of our observations.

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