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Title:The two dimensional electron system as a nanoantenna in the microwave and terahertz bands

Authors:Iarrea, Jess (1)

Author affiliation:(1) Escuela Politécnica Superior, Universidad Carlos III, Leganes 28911, Madrid, Spain

Corresponding author:Iarrea, J.(jinarrea@fis.uc3m.es)

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Abstract:We study the magnetoresistance of two-dimensional electron systems under several radiation sources of different frequencies for moderate power. We use the model of radiation-driven electron orbits extended to this regime. First, we consider the case of two different radiations and we find a regime of superposition or interference of harmonic motions, i.e., a modulated magnetoresistance response with pulses and beats. Finally, we consider a multiple photoexcitation case where we propose the two-dimensional electron system as a potential nanoantenna device or ultrasensitive detector for the microwave and terahertz bands. Thus, these results could be of special interest in nanophotonics and nanoelectronics.

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