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Radiation-induced decay of Shubnikov-de Haas oscillations in the regime of the radiation-induced zero-resistance states in GaAs/AlGaAs devices RAMESH MANI, Dept. of Physics & Astronomy, Georgia State University — The observation of zero-resistance states upon photo-exciting a quasi two-dimensional electron system has increased the experimental and theoretical interest in the photoexcited steady states of the low dimensional electron system.[see 1] We examine here the experimentally observed decay of Shubnikov-de Haas (SdH) oscillations under photoexcitation in the regime of the radiation-induced zero-resistance states with resolved Landau levels, in order to obtain further insight into the zero-resistance states themselves.[2,3] A covariation study indicates that the SdH amplitude scales simply with the average background resistance in the vicinity of the radiation-induced resistance minima and maxima,[3,4] as the SdH amplitude vanishes in proportion to the background resistance at the centers of the zero-resistance states. The results suggest that the dissipative current is suppressed in proportion to the background resistance, at the centers of the radiation-induced zero-resistance states. [1] R. G. Mani, Sol. St. Comm. 144, 409 (2007). [2] R. G. Mani, Appl. Phys. Lett. 85, 4962 (2004). [3] R. G. Mani, Appl. Phys. Lett. 91, 132109 (2007). [4] R. G. Mani, unpublished.

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