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Spin Lifetimes in annealed GaInNAs epilayers¹ YUTSUNG TSAI, BIPLOB BARMAN, THOMAS SCRACE, ATHOS PETROU, SUNY at Buffalo, MIWA FUKUDA, IAN SELLERS, University of Oklahoma, MATHIEU LEROUX, MOHAMED KHALFIOUI, CRHEA-CNRS, France, SUNY AT BUFFALO COL-LABORATION, UNIVERSITY OF OKLAHOMA COLLABORATION, CRHEA-CNRS COLLABORATION — We have carried out Hanle measurements of the electron spin lifetime $T_{\rm S}$ in optically pumped annealed GaInNAs epilayers (undoped and p-type doped). The samples were placed in a 7T optical magnet cryostat with the magnetic field applied in the epilayer plane. The emitted light was collected along the normal to the epilayers. The PL was excited using the 1064 nm line from a Nd:YAG laser which gives a polarization P = 5% at B=0. The transverse magnetic field results in a reduction of P, from which we determine T_S . At T = 50 K, the electron spin lifetime T_S was measured to be 15 ps. As the sample temperature increases, T_S decreases ($T_S = 7$ ps at T = 150 K). Our Hanle results are in agreement with the T_S values measured by Lombez *et al.* using time-resolved photoluminescence spectroscopy [2]. The observed sharp reduction in T_S in annealed samples is interpreted as due to the D'yakonov-Perel' spin relaxation mechanism. [3] In annealed samples the momentum relaxation time increases, resulting in a reduction of T_S [2] L. Lombez et al, Appl Phys Lett 87, 252115(2005) [3] M.I. D'yakonov and V.I. Perel', Soviet Physics JETP, 33, 1053(1971)

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