

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Intersubband lifetime magnetophonon oscillations in AlGaAs and InGaAs:InP quantum cascade lasers DMITRY SMIRNOV, AARON WADE, National High Magnetic Field Laboratory, ANGELA VASANELLI, CARLO SIRTORI, Universite Paris VII, France — We investigate the influence of a strong magnetic field on intersubband scattering rates in AlGaAs and InGaAs quantum cascade lasers (QCL). Laser threshold, differential quantum efficiency and laser emission spectra were measured in magnetic fields up to 30T applied perpendicular to the 2D planes. Intersubband magnetophonon effect – resonant optical phonon non-radiative relaxation, gives rise to the strong oscillations in laser emission. We derived the magnetic field dependence of intersubband lifetime and compare to the calculated dependence of electron- LO phonon scattering rates.

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Date submitted: 30 Nov 2004

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