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Magnetic field controlled sub-THz emission in Quantum Cascade Lasers A. WADE, G. FEDOROV, D. SMIRNOV, NHMFL, S. KUMAR, Q. HU, MIT, Dept of EE and CS, B.S. WILLIAMS, Univ. of California at LA, Dept of EE — We report on the observance of strong multi-wavelength terahertz (THz) radiation in GaAs/AlGaAs based Quantum Cascade Lasers (QCL). The QCL was measured in a strong magnetic field, up to 31 T, applied parallel to the growth axis. The lasing intensity exhibits oscillations due to magnetophonon resonance and Landau Level interaction resulting in a strong increase in the optical power and reduction of the current threshold. By applying the appropriate magnetic field and bias, lasing emission is obtained between 3.27 to 2.61 and 1.53 to 0.68 THz. This demonstrates that a magnetic field offers the unprecedented possibility to control the QCL emission frequency and achieve lasing action as low as 0.68 THz.

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