

251. Title: Time-domain spectroscopy of mid-infrared quantum cascade lasers

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Abstract: In this work we present phase-resolved measurements of the stimulated emission process in a quantum cascade laser emitting at 11.7 μm . In particular, we are focusing on the temperature performance of the intersubband gain in a spectrally broad region. We find that the gain turns into strong absorption at higher temperatures. We show that the phase information is mandatory to describe the correct relation between stimulated emission and absorption. Due to the importance of the correct phase estimation, we present an extended