
Contribution ID: **183** Type: **Talk**

# 【151】Coherent Broadening and Tuning of QCL Frequency Combs viaRF-Injection

*Thursday, 2 September 2021 17:00 (15 minutes)*

We present control over the emitted state of quantum cascade laser frequency combs through strong radio-frequency modulation close to their repetition frequency. In particular, coherent broadening of the spectrum from about 20 $cm^{-1}$ to 60$cm^{-1}$ can be achieved throughout the DC-current dynamical range. Close to the free-running beatnote frequency, tuning of the modulation frequency results in tuning of the spectral bandwidth and center-frequency. By switching between modulation frequencies we can multiplex spectral regions with negligible overlap from the same device at rates of at least 20 kHz. In the time-domain, we are able to transition from quasi-continuous to pulsed ($\tau_p \approx 55$ ps) output by injecting at high power.

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**Session Classification:** Condensed Matter Physics

**Track Classification:** Condensed Matter Physics (KOND)