



Contribution ID: 183

Type: Talk

【151】 Coherent Broadening and Tuning of QCL Frequency Combs via RF-Injection

Thursday, September 2, 2021 5:00 PM (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 ($\tau_p \approx 55 \text{ ps}$) output by injecting at high power.

Primary author: SCHNEIDER, Barbara (ETH Zurich)

Co-authors: KAPSALIDIS, Filippos (ETH Zürich); Dr BERTRAND, Mathieu (ETH Zurich); TÄSCHLER, Philipp (ETH Zurich); HILLBRAND, Johannes (ETH Zurich); SINGLETON, Matthew (ETH Zurich); Dr BECK, Mattias (ETH Zurich); Prof. JÉRÔME, Faist (ETH Zurich)

Presenter: SCHNEIDER, Barbara (ETH Zurich)

Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics (KOND)