



Contribution ID: 234

Type: **Talk**

【114】 Measuring the Linewidth Enhancement Factor of a Laser Frequency Comb

Tuesday, August 31, 2021 5:15 PM (15 minutes)

The linewidth enhancement factor (LEF) is known as an important property of semiconductor lasers. Recently, it is gaining more interest due to its key role in frequency comb operation. However, as of yet existing techniques to measure the LEF are limited to sub-threshold bias or single-mode operation. Here, we introduce a novel and universally applicable method to directly obtain the spectrally resolved LEF of a running laser frequency comb. The technique utilizes a phase-sensitive single shot measurement scheme. We derive a theoretical model, which is investigated by extensive Maxwell-Bloch simulations and demonstrated in an experiment on a quantum cascade laser.

Primary authors: PILAT, Florian (TU Wien); OPACAK, Nikola (Technical University of Vienna)

Co-authors: KAZAKOV, Dmitri (John A. Paulson School of Engineering and Applied Sciences, Harvard University); DAL CIN, Sandro (TU Wien); RAMER, Georg (Institute of Chemical Technologies and Analytics, TU Wien); LENDL, Bernhard (TU Wien); Prof. CAPASSO, Federico (John A. Paulson School of Engineering and Applied Sciences, Harvard University); SCHWARZ, Benedikt (Institute of Solid State Electronics, TU Wien)

Presenter: PILAT, Florian (TU Wien)

Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics (KOND)