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【177】Homogeneous, bound-to-continuum THz Quantum Cascade Laser: 1.65 THz spectral bandwidth and RF injection locking

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We present a homogeneous, bound-to-continuum Quantum Cascade Laser (QCL) featuring a spectral bandwidth up to 1.65 THz centered at 3.45 THz in a bi-stable CW lasing point above the typically not accessible NDR regime due to voltage driven operation. Below the NDR a spectral coverage of ˜1 THz is observed with an electrically detected single and narrow beatnote indicating frequency comb emission. Further, injection locking to an external RF synthesizer with powers down to roughly -55 dBm at the QCL was realized. For increasing injection power the locking range follows the prediction of the Adler's Equation. Therefore, the device features the advantages of low injection powers and low threshold current density, 115 A/cmˆ2, but bandwidths still comparable to heterogeneous devices.

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