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Autor(en) des Beitrags: Todor, S.; Biedermann, B.; Huber, R.; Jirauschek, C.

Titel des Beitrags: Balance of Physical Effects Causing Stationary Operation of Fourier Domain Mode-Locked Lasers

Abstract: We present a detailed analysis of the optical field dynamics in a Fourier domain mode-locked (FDML) laser. We employ a numerical simulation based on the FDML evolution equation, describing the propagation of the optical light field. The temporal evolution of the instantaneous power spectrum at different points in the laser cavity is investigated. The results are carefully validated against experimental data, yielding good agreement. Deeper insight is gained into the role of the physical effects governing FDML dynamics, such as gain recovery and linewidth enhancement in the semiconductor optical amplifier, dispersion and self-phase modulation in the optical fiber, and the sweep filter action.


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