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Title:Mode-locking of a terahertz laser by direct phase synchronization
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Abstract:A novel scheme to achieve mode-locking of a multimode laser is demonstrated. Traditional methods to produce ultrashort laser pulses are based on modulating the cavity gain or losses at the cavity roundtrip frequency, favoring the pulsed emission. Here, we rather directly act on the phases of the modes, resulting in constructive interference for the appropriated phase relationship. This was performed on a terahertz quantum cascade laser by multimode injection seeding with an external terahertz pulse, resulting in phase mode-locked terahertz laser pulses of 9ps duration, characterized unambiguously in the time domain. © 2012 Optical Society of America.
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