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Cundiff et al.

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(54) **MODE-LOCKED PULSED LASER SYSTEM AND METHOD**

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(57) **ABSTRACT**

Disclosed is a system and method for stabilizing the carrier-envelope phase of the pulses emitted by a femtosecond mode-locked laser by using the powerful tools of frequency-domain laser stabilization. Control of the pulse-to-pulse carrier-envelope phases was confirmed using temporal cross correlation. This phase stabilization locks the absolute frequencies emitted by the laser, which is used to perform absolute optical frequency measurements that were directly referenced to a stable microwave clock.

28 Claims, 27 Drawing Sheets

