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Patent Number(s): US2012145902-A1
Title: System for imaging in tetrahertz (THz) spectral range used in infrared spectroscopy, generates frequency grid in radirequency (RF) domain corresponding to THz domain to stabilize difference in repetition rates two oscillators
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Abstract: NOVELTY - The system has coherent dual scanning laser system (CDSL) comprising two passively modelocked fiber oscillators (110a,110b) to operate at different repetition rates. Feedback system stabilizes difference in repetition rates two oscillators and scales RF frequency to THz frequency. Information generated by feedback system is used to generate frequency grid in radio-frequency (RF) domain corresponding to frequency grid in THz domain. Material emits THz radiation in response to output CDSL and detectors (D1,D2) detects THz radiation.
USE - System for imaging in tetrahertz (THz) spectral range used in infrared spectroscopy and THz imaging. Can also be used in micro-spectroscopy, microscopy and Fourier transform spectroscopy.
ADVANTAGE - Since feedback system generates frequency grid in radirequency (RF) domain corresponding to THz domain to stabilize difference in repetition rates two oscillators and to scale RF frequency to THz frequency and material emits THz radiation in response to output CDSL, nonlinear signal interference in nonlinear frequency broadening elements from overlapping pulses can be eliminated. Carrier envelope fset frequencies and repetition rates in coherent dual scanning femto second modelocked fiber lasers can be controlled by phase locking two lasers to external cavities. Noise carrier envelope fset frequencies can be minimized. Drift in carrier envelope fset frequency between two lasers in CDSLs can be monitored and corrected. Repetition rate and integrity system are improved.
DESCRIPTION DRAWING(S) - The drawing shows a schematic block diagram CDSL.
Oscillators (110a,110b)
Amplifier (420)
Intermediate supercontinuum generation section (430)
Non-linear crystal (440)
Detectors (D1,D2)
Drawing:
Derwent Class Code(s): S03 (Scientific Instrumentation, photometry, calorimetry); V08 (Lasers and Masers)
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