41
Accession number:20114014404848
Title:High-precision frequency measurements in the THz spectral region using an unstabilized femtosecond laser
Authors:Füser, Heiko (1); Judaschke, Rolf (1); Bieler, Mark (1)
Author affiliation:(1) Physikalisch-Technische Bundesanstalt, Bundesallee 100, 38116 Braunschweig, Germany
Corresponding author:Füser, H.(heiko.fueser@ptb.de)
Source title:Applied Physics Letters
Abbreviated source title:Appl Phys Lett
Volume:99
Issue:12
Issue date:September 19, 2011
Publication year:2011
Article number:121111
Language:English
ISSN:00036951
CODEN:APPLAB
Document type:Journal article (JA)
Publisher:American Institute of Physics, 2 Huntington Quadrangle, Suite N101, Melville, NY 11747-4502, United States
Abstract:We perform high-precision frequency measurements in the THz frequency range using an unstabilized femtosecond laser. A simple and flexible algorithm is used to correct the beating signal resulting from the THz source and one comb line of the rectified optical comb for fluctuations of the laser repetition rate. Using this technique, we demonstrate an accuracy of our measurement device as high as (9 3) 10^{-14} for the measurement of a 100 GHz source. This is two orders of magnitude better than previous precision measurements in this frequency range employing femtosecond lasers.
Number of references:14