2.
Accession Number
12230606
Author
Hindle F. Mouret G. Eliet S. Guinet M. Cuisset A. Bocquet R. Yasui T. Rovera D.
Author/Editor Affiliation
Hindle F. Mouret G. Eliet S. Guinet M. Cuisset A. Bocquet R. : Universite' Lille Nord de France, Lille 59000, France
Yasui T. : Institute of Technology and Science, University of Tokushima, Tokushima, Japan
Rovera D. : Systemes de Re'fe'rence Temps-Espace, Observatoire de Paris, 61 avenue de l'Observatoire, Paris 75014, France
Title
Widely tunable THz synthesizer
Source
Applied Physics B: Lasers and Optics, vol.104, no.4, Sept. 2011, 763-8. Publisher: Springer Berlin, Germany.
Abstract
The generation of cw-THz radiation by photomixing is particularly suited to the high resolution spectroscopy of gases; nevertheless, until recently, it has suffered from a lack of frequency metrology. Frequency combs are a powerful tool that can transfer microwave frequency standards to optical frequencies and a single comb has permitted accurate (10−8) THz frequency synthesis with a limited tuning range. A THz synthesizer composed of three extended cavity laser diodes phase locked to a frequency comb has been constructed and its utility for high resolution gas phase spectroscopy demonstrated. The third laser diode allows a larger tuning range of up to 300 MHz to be achieved without the need for large frequency excursions, while the frequency comb provides a versatile link to be established from any traceable microwave frequency standard. The use of a single frequency comb as a reference for all of the cw-lasers eliminates the dependency of synthesized frequency on the carrier envelope offset frequency. This greatly simplifies the frequency comb stabilization requirements and leads to a reduced instrument complexity. (13 References).