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- **Long-term absolute frequency measurements of 633 nm iodine-stabilized laser standards at NRC and demonstration of high reproducibility of such devices in international frequency measurements**
Metrologia; (2004-04-07)
- **Progress in stabilization of the He-Ne/¹²⁷₂ wavelength standard at 633 nm and results of an international comparison between the PTB and the UME**
Metrologia; (2003-04-08)
- **Comparison between the He-Ne laser wavelength standards at 633 nm from the UME and the BIPM**
Metrologia; (2003-04-08)
- **Comparison of He-Ne/I ₂-Lasers from Russia (VNIIM) and the Republic of Belarus (BelGIM)**
Measurement Techniques; (07.2005)

[1-5] [6-10] [11-15] [16-20] [21-25] [26-30] [31-31] ▶

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- **Molecular fingerprinting with the resolved modes of a femtosecond laser frequency comb**
Diddams, S-A+ / Hollberg, L+ / Mbele, V+
Nature, UK; (2007)
- **Lung dosimetry for radioiodine treatment planning in the case of diffuse lung metastases**
Song, H+ / He, B / Prideaux, A / Du, Y / Frey, E / Kasecamp, W / Ladenson, P-W / Wahl, R-L / Sgouros, G
Journal of Nuclear Medicine, USA; (2006)
- **Iodine-doped pentacene schottky diodes for high-frequency RFID rectification**
Huang, D+ / Subramanian, V+
Device Research Conference, University Park, PA, USA, 26-28 June 2006; (2006)

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Accession number

4159957, INSP, 26.02.07; Words: 416

Database

INSP, FIZ Technik Frankfurt: Inspec (C) IEE

Title

Molecular fingerprinting with the resolved modes of a femtosecond laser frequency comb

Abstract

The control of the broadband frequency comb emitted from a mode-locked femtosecond laser has permitted a wide range of scientific and technological advances-ranging from the counting of optical cycles for next-generation atomic clocks to measurements of phase-sensitive high-field processes'. A unique advantage of the stabilized frequency comb is that it provides, in a single laser beam, about a million optical modes with very narrow linewidths and absolute frequency positions known to better than one part in 10^{15} (ref. 5). One important application of this vast array of highly coherent optical fields is precision spectroscopy, in which a large number of modes can be used to map internal atomic energy structure and dynamics. However, an efficient means of simultaneously identifying, addressing and measuring the amplitude or relative phase of individual modes has not existed. Here we use a high-resolution disperser to separate the individual modes of a stabilized frequency comb into a two-dimensional array in the image plane of the spectrometer. We illustrate the power of this technique for high-resolution spectral fingerprinting of molecular iodine vapour, acquiring in a few milliseconds absorption images covering over 6 THz of bandwidth with high frequency resolution. Our technique for direct and parallel accessing of stabilized frequency comb modes could find application in high-bandwidth spread-spectrum communications with increased security, high-resolution coherent quantum control, and arbitrary optical waveform synthesis' with control at the optical radian level.

Datenbank: INSPEC® (Treffer 1-5 von 323)

Molecular fingerprinting with the resolved modes of a femtosecond laser frequency comb

Diddams, S-A+ / Hollberg, L+ / Mbele, V+
Nature, UK; (2007)

Lung dosimetry for radioiodine treatment planning in the case of diffuse lung metastases

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Metrologia; (2003-03-13)
- ~~Long term absolute frequency measurements of 633.810204nm iodine-stabilized laser standards at NRC and demonstration of high reproducibility of such devices in international frequency measurements~~
Metrologia; (2004-04-07)
- **Progress in stabilization of the He-Ne/¹²⁷/₂ wavelength standard at 633 nm and results of an international comparison between the PTB and the UME**
Metrologia; (2003-04-08)
- **Comparison between the He-Ne laser wavelength standards at 633 nm from the UME and the BIPM**
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- **Comparison of He-Ne/₂-Lasers from Russia (VNIIM) and the Republic of Belarus (BelGIM)**
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Datenbank: Elektronische Volltexte (Treffer 1-5 von 31)

□ A 633 nm iodine-stabilized diode-laser frequency standard
Metrologia; (2003-03-13)

□ Long term absolute frequency measurements of 633.8 # 0204 nm iodine-stabilized laser standards at NRC and demonstration of high reproducibility of such devices in international frequency measurements

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Titel A 633 nm iodine-stabilized diode-laser frequency standard

Autor C S Edwards ; G P Barwood ; P Gill ; W R C Rowley ,

In: Metrologia, Band 36 Heft 1 . - S. (41-45)

Jahr 2003-03-13

Verlag Institute of Physics

ISSN 0026-1394

Format pdf

Abstract
An extended-cavity diode laser has been stabilized to hyperfine components of the 6-3, P(33) transition of the B-X system of $^{127}\text{I}_2$ at 633 nm, and its performance evaluated by comparison with an iodine-stabilized He-Ne laser. The Allan standard deviation follows a slope of $3.8 \times 10^{-11} \tau^{-1/2}$, reaching a minimum of 1.7×10^{-12} at 500 s, and the reproducibility of the diode laser locked to component b_{21} has been determined to be 7 kHz (standard uncertainty) corresponding to a fractional uncertainty of 1.5×10^{-11} . In addition, the influence of modulation depth, iodine pressure and axial power density on laser frequency has been investigated. Complete hyperfine interval sets and absolute frequency determinations of component b_{21} are presented for modulation depths of 2 MHz and 6 MHz.

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Währung	Euro	
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Verlegerabgabe	26,59 Euro	26,59 Euro
Bearbeitungsgebühr	3,00 Euro	1,50 Euro
Gesamtpreis	29,59 Euro	28,09 Euro

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Herzlichen Dank!

Dr. Esther Tobschall

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