CURRICULUM VITAE

Name: **Alexander Nevsky**
Date and place of birth: 11.06.1963, Novosibirsk, Russia
Nationality: Russian
Marital Status: married, 1 daughter (born in 1996)
Professional address: Heinrich-Heine-Universität Düsseldorf
Institut für Experimentalphysik
40225 Düsseldorf
Position in organization: Senior scientist, group leader
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Scientific specialty

Molecular and atomic high-resolution spectroscopy, laser frequency stabilization, nonlinear optical frequency conversion, optical frequency standards, laser physics, optical frequency measurements

Education

Physics Diploma, Novosibirsk State Technical University, Novosibirsk, Russia, 1985

Ph.D. in experimental physics, Institute of Laser Physics, Novosibirsk, 1996

Work experience

1985 - 2004 researcher, senior researcher, senior scientist at the Institute of Laser Physics, Novosibirsk, Russia (group of Prof. V. Chebotayev, group of Prof. S. Bagayev).

1997 - 1999 visiting scientist at the Max-Planck-Institut für Quantenoptik (group of Prof. H. Walther) (Volkswagen Foundation grant, short-term visits).

1999 - 2004 - visiting scientist at the Max-Planck-Institut für Quantenoptik (Max-Planck Society stipendium, group of Prof. H. Walther).

2004 – present: senior researcher at the Heinrich-Heine Universität Düsseldorf.

Awards

Prof. V. Chebotayev Award (1996)

Young Scientists Award in physics from the Siberian Branch of the Russian Acad. of Science (1994).

Publications

More than 40 publications in refereed journals

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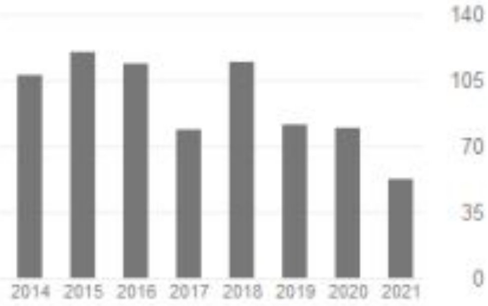


Curriculum Vitae (continued)

Projects

2000-3 INTAS joint project #99-1366 “New time/frequency standards for precise measurements in physics” (MPQ, Garching (G), Institute of laser physics, Novosibirsk (Rus), University of Pisa (I)

2006-9 EU-STREP project "VILLAGE - Versatile Infrared Laser source for Low-cost Analysis of Gas Emissions" (with Thales (F), Univ. Southampton (UK), Univ. Valladolid (E), NEO (N))

2007-10 ESA Project "Space Optical Clocks" (partners: SYRTE Paris, PTB Braunschweig, LENS/Univ. Firenze, ENS Paris)

2009-14 ESA-ESOC (Darmstadt) Project “Optical cavity cryo resonator breadboard”

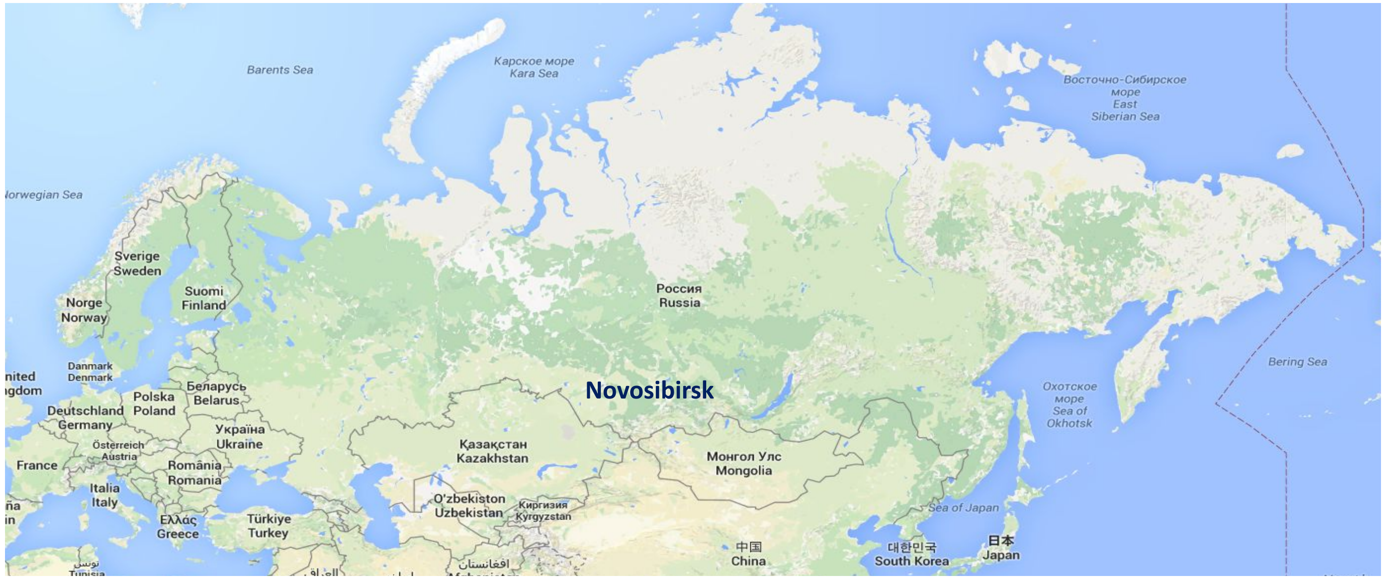
2011-15 EU-FP7-SPACE Project "Space Optical Clocks 2" (16 partners from D, I, F, CH, UK)

2011-13 DLR project MOLO – “Microwave Optical Local Oscillator”, partners PTB Braunschweig

Different **DFG projects**

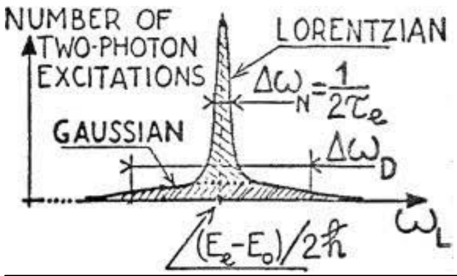
Expert Skolkovo
Expert RosNano
Expert of the Ministry of Education and Science of the Russian Federation

Novosibirsk scientific center of the Russian Academy of Sciences



Institute of Laser Physics, Novosibirsk

Prof. Chebotayev



Saturation spectroscopy, two-photon resonances, ultra-stable laser, optical frequency measurements, optical standards

Prof. Bagayev

Prof. Alexey Taichenachev

Optical clocks

Main scientific achievements

N·H
ELSEVIER
1 September 2002
Optics Communications 210 (2002) 91–100
OPTICS COMMUNICATIONS
www.elsevier.com/locate/optcom

A Nd:YAG Laser with short-term frequency stability at the Hertz-level

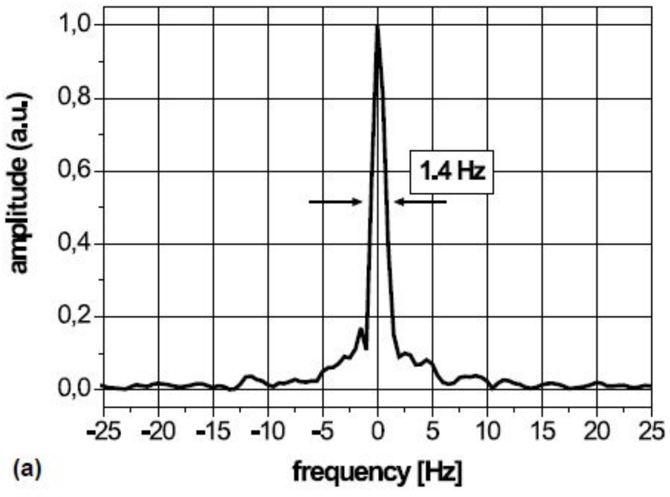
A.Yu. Nevsky, M. Eichenseer, J. von Zanthier*, H. Walther

Sektion Physik der Ludwig-Maximilians-Universität München and Max-Planck-Institut für Quantenoptik, D-85748 Garching, Germany

Received 25 April 2002; accepted 3 July 2002

Abstract

We report on the frequency stabilisation of a Nd:YAG laser at 946 nm to the Hertz-level. The laser will be used for ultra-high resolution spectroscopy of the $5s^2\,{}^1S_0 - 5s5p\,{}^3P_0$ transition in In^+ and will ultimately serve as a local oscillator of an optical frequency standard based on a single trapped indium ion. To resolve the extremely narrow ${}^1S_0 - {}^3P_0$ resonance (natural linewidth 0.82 Hz) at 237 nm, the frequency-quadrupled Nd:YAG laser radiation has to be frequency stable at the Hertz-scale for measurement times up to several tens of seconds. We obtain the frequency stability of the laser by locking it onto an external reference cavity of high finesse, placed on an active vibration isolation platform.



Appl Phys B (2011) 104:741–745
DOI 10.1007/s00340-011-4652-7
Applied Physics B
Lasers and Optics

Demonstration of a transportable 1 Hz-linewidth laser

S. Vogt · C. Lisdat · T. Legero · U. Sterr · I. Ernsting ·
A. Nevsky · S. Schiller

Received: 16 December 2010 / Revised version: 17 May 2011 / Published online: 29 July 2011

Appl. Phys. B 73, 269–271 (2001)
DOI: 10.1007/s003400100633
Rapid communication
Applied Physics B
Lasers and Optics

Absolute frequency measurement of iodine lines with a femtosecond optical synthesizer

[1] Max-Planck-Institut für Quantenoptik, Hans-Kopfermann-Str. 1, 85748 Garching, Germany
[2] Optoelectronics Group, Department of Physics, University of Bath, Claverton Down, Bath, BA2 7AY, UK
[3] Institute of Laser Physics, 630090 Novosibirsk, Russia

2001
: 19 September 2001 • © Springer-Verlag 2001

ıave used a single laser femtosecond optical frequency synthesizer videly tunable Nd:YAG laser to measure the absolute frequency of n lines in molecular iodine around 532 nm. The use of two different ıcies allows us to determine the number of modes used for the freıent unambiguously. The lines also provide data for the determination ibrational constants of the iodine molecule.

62.Fi; 42.65.Re

carried out precise absolute frequency measurements of a number of iodine lines [3, 11–14].

We demonstrate in this article a fs optical frequency synthesizer operated with different repetition rates as a simple, reliable and versatile tool for measuring previously unknown optical frequencies, taking an iodine-stabilized Nd:YAG laser with a wide frequency tuning range as a measurement example.

Main scientific achievements

Frequency Standards and Metrology, pp. 521-523 (2002)

No Access

Figures References Related **Details**

FREQUENCY COMPARISON OF I_2 STABILIZED LASERS AT 532 NM AND ABSOLUTE FREQUENCY MEASUREMENT OF I_2 ABSORPTION LINES

A. YU. NEVSKY, R. HOLZWARTH, M. ZIMMERMANN, TH. UDEM, T. W. HÄNSCH, J. VON ZANTHIER, H. WALTHER, P. V. POKASOV, M. N. SKVORTSOV, S. N. BAGAYEV, H. SCHNATZ and F. RIEHLE

https://doi.org/10.1142/9789812777713_0068 | **Cited by:** 0

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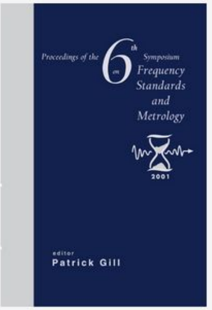

Frequency Standards and Metrology

Abstract:

We present results of a frequency comparison of iodine stabilized frequency-doubled Nd:YAG lasers at 532 nm as well as absolute frequency measurements of different molecular iodine absorption lines [1,2], performed at the Max-Planck-Institut für Quantenoptik, Garching.

BIPM

Approved by the CIPM in October 2007

RECOMMENDED VALUES OF STANDARD FREQUENCIES FOR APPLICATIONS INCLUDING THE PRACTICAL REALIZATION OF THE METRE AND SECONDARY REPRESENTATIONS OF THE DEFINITION OF THE SECOND

IODINE ($\lambda \approx 532$ nm)

Absorbing molecule $^{127}I_2$, a_{10} component, R(56) 32-0 transition[(1)]

1. CIPM recommended values

The values $f = 563\ 260\ 223\ 513$ kHz
$\lambda = 532\ 245\ 036.104$ fm
with a relative standard uncertainty of 8.9×10^{-12} apply to the radiation of a frequency-doubled Nd:YAG laser, stabilized with an iodine cell external to the laser, subject to the conditions:

[4] Holzwarth R., Nevsky A. Yu., Zimmermann M., Udem Th., Hänsch T. W., von Zanthier J., Walther H., Knight J. C., Wadsworth W. J., Russel P. St. R., Skvortsov M. N., Bagayev S. N., Absolute frequency measurement of iodine lines with a femtosecond optical synthesizer, *Appl. Phys. B*, 2001, **73**, 269-271.

[5] Nevsky A. Yu., Holzwarth R., Reichert J., Udem Th., Hänsch T. W., von Zanthier J., Walther H., Schnatz H., Riehle F., Pokasov P. V., Skvortsov M. N., Bagayev S. N., Frequency comparison and absolute frequency measurement of I_2-stabilized lasers at 532 nm, *Optics Commun.*, 2001, **192**, 263-272.

Main scientific achievements

LENTA.RU Наука и техника
12 АПРЕЛЯ 2018, ЧЕТВЕРГ, 18:29

17:48, 16 сентября 2009

Физики подтвердили инвариантность скорости света

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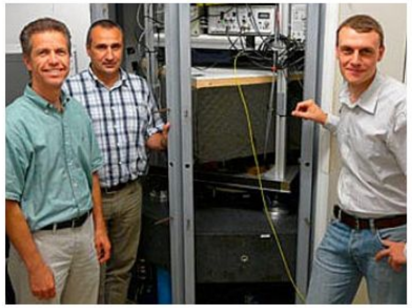

Немецкие ученые провели самый точный на сегодняшний день опыт Майкельсона, предназначенный для проверки независимости скорости света от направления его распространения. Именно классическая версия этого опыта, выполненная в конце XIX века, привела к возникновению теории относительности. Статья ученых появилась в журнале *Physical Review Letters*, а ее краткое изложение приводит physicsworld.com.

PRL **103,** 090401 (2009) PHYSICAL REVIEW LETTERS week 28 AUG

Laboratory Test of the Isotropy of Light Propagation at the 10^{-17} Level

Ch. Eisele, A. Yu. Nevsky, and S. Schiller
Institut für Experimentalphysik, Heinrich-Heine-Universität Düsseldorf, 40225 Düsseldorf, Germany
(Received 13 June 2008; revised manuscript received 7 August 2009; published 25 August 2009)

We report on the results of a strongly improved test of local Lorentz invariance, consisting of a search for an anisotropy of the resonance frequencies of electromagnetic cavities. The apparatus comprises two orthogonal standing-wave optical cavities interrogated by a laser, which were rotated approximately 175 000 times over the duration of 13 months. The measurements are interpreted as a search for an anisotropy of the speed of light, within the Robertson-Mansouri-Sexl (RMS) and the standard model extension (SME) photon sector test theories. We find no evidence for an isotropy violation at a 1σ uncertainty level of 0.6 parts in 10^{17} (RMS) and 2 parts in 10^{17} for seven of eight coefficients of the SME.

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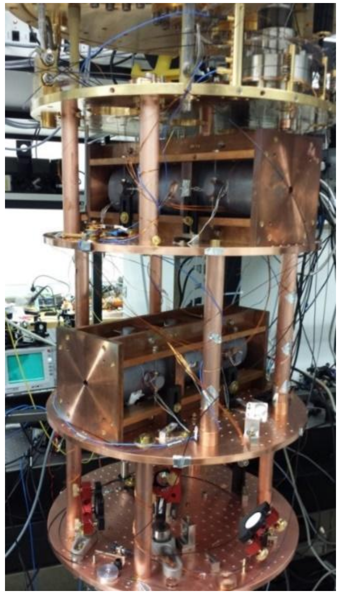
Resonator with Ultrahigh Length Stability as a Probe for Equivalence-Principle-Violating Physics

E. Wiens, A. Yu. Nevsky, and S. Schiller
Phys. Rev. Lett. **117**, 271102 – Published 29 December 2016



PHYSICAL REVIEW A
covering atomic, molecular, and optical physics and quantum information

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Characteristics of long-lived persistent spectral holes in Eu^{3+}: Y_2SiO_5 at 1.2 K

René Oswald, Michael G. Hansen, Eugen Wiens, Alexander Yu. Nevsky, and Stephan Schiller
Phys. Rev. A **98**, 062516 – Published 21 December 2018

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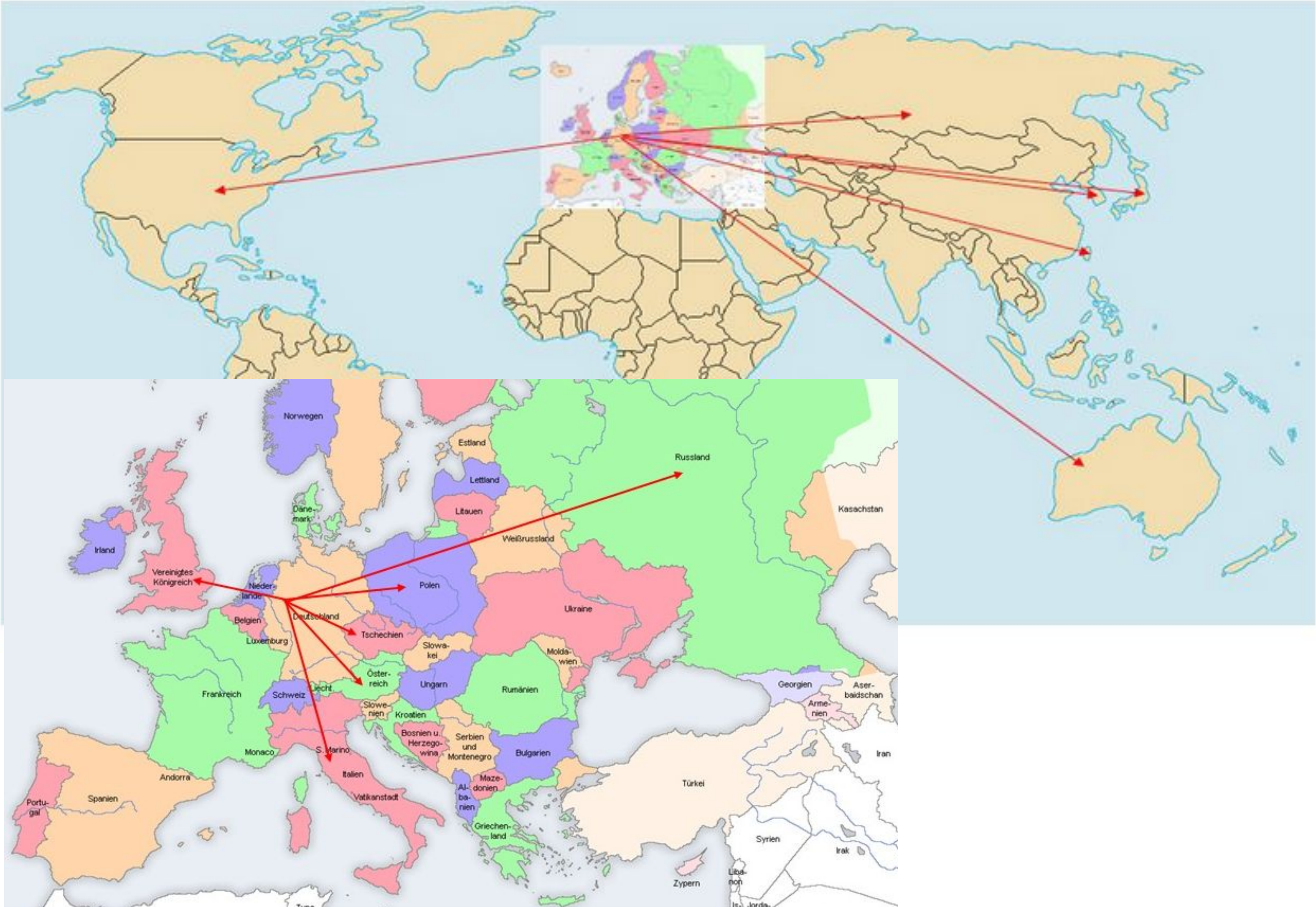

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