

Thomas Udem, Publications

159. **Mode locking based on the temporal Talbot effect**
Thomas Udem and Akira Ozawa, *Appl. Phys. B* 123:100 (2017).
158. **Deuteron charge radius and Rydberg constant from spectroscopy data in atomic deuterium** Randolph Pohl, François Nez, Thomas Udem, Aldo Antognini, Axel Beyer, Hélène Fleurbaey, Alexey Grinin, Theodor Hänsch, Lucile Julien, Franz Kottmann, Julian Krauth, Lothar Maisenbacher, Arthur Matveev and François Biraben, *Metrologia* 54, L1 (2017).
157. **A compact Echelle Spectrograph for characterization of Astro-Combs**
Rafael A. Probst, Tilo Steinmetz, Yuanjie Wu, Frank Grupp, Thomas Udem and Ronald Holzwarth, *Appl. Phys. B* 123:76 (2017).
156. **Active Fiber-Based Retroreflector providing phase-retracing anti-parallel Laser Beams for precision Spectroscopy**
A. Beyer, L. Maisenbacher, A. Matveev, R. Pohl, K. Khabarova, Y. Chang, A. Grinin, T. Lamour, T. Shi, D.C. Yost, Th. Udem, T.W. Hänsch, and N. Kolachevsky, *Opt. Expr.* 24, 17470 (2016).
155. **Carrier-Envelope-Phase stabilization via dual Wavelength Pumping**
M. Seidel, J. Brons, F. Lücking, V. Pervak, A. Apolonski, Th. Udem and O. Pronin, *Opt. Lett.* 41, 1853 (2016).
154. **Doppler Cooling Trapped Ions with a UV Frequency Comb**
Josue Davila-Rodriguez, Akira Ozawa, Theodor W. Hänsch, and Thomas Udem, *Phys. Rev. Lett.* 116, 043002 (2016).
153. **Absolute frequency and isotope shift of the magnesium $(3s^2)^1S_0 \rightarrow (3s3d)^1D_2$ two-photon transition by direct frequency comb spectroscopy**
E. Peters, S. Reinhardt, T. W. Hänsch, and Th. Udem, *Phys. Rev. A* 92, 063403 (2015).
152. **Precision Spectroscopy of 2SnP Transitions in atomic Hydrogen for a new Determination of the Rydberg Constant and the Proton Charge Radius**
Axel Beyer, Lothar Maisenbacher, Ksenia Khabarova, Arthur Matveev, Randolph Pohl, Thomas Udem, Theodor W Hänsch and Nikolai Kolachevsky, *Phys. Scr.* T165 014030 (2015).
151. **Optical Frequency Dissemination for Metrology Applications**
Stefan Droste, Thomas Udem, Ronald Holzwarth, and Theodor Wolfgang Hänsch, *C. R. Physique* 16, 524 (2015).
150. **High-Power multi-Megahertz Source of Waveform-stabilized few-Cycle Light**
O. Pronin, M. Seidel, F. Lücking, J. Brons, E. Fedulova, M. Trubetskov, V. Pervak, A. Apolonski, Th. Udem, and F. Krausz, *Nat. Commun.* 6, 6988 (2015).
149. **A simplified Scheme for Generating narrow-band mid-ultraviolet Laser Radiation**
G. Almog, M. Scholz, W. Weber, P. Leisching, W. Kaenders, and Th. Udem, *Rev. Sci. Instr.* 86, 033110 (2015).

148. **Comb-Calibrated Solar Spectroscopy through a multiplexed Single-Mode Fiber Channel**
R.A. Probst, L. Wang, H.-P. Doerr, T. Steinmetz, T.J. Kentischer, G. Zhao, T.W. Hänsch, Th. Udem, R. Holzwarth and W. Schmidt, *New J. Phys.* 17, 023048 (2015).
147. **Geometrical on-axis Access to high-Finesse Resonators by quasi-Imaging: a Theoretical Description**
J. Weitenberg, P. Rußbüldt, I. Pupeza, Th. Udem, H.D. Hoffmann and R. Poprawe, *J. Opt.* 17 025609 (2015).
146. **Quantum Interference in Two-Photon Frequency-Comb Spectroscopy**
D.C. Yost, A. Matveev, E. Peters, A. Beyer, T.W. Hänsch, and Th. Udem, *Phys. Rev. A* 90, 012512 (2014).
145. **Optical-Frequency Transfer over a Single-Span 1840 km Fiber Link**
S. Droste, F. Ozimek, Th. Udem, K. Predehl, T.W. Hänsch, H. Schnatz, G. Grosche, and R. Holzwarth, *Phys. Rev. Lett.* 111, 110801 (2013).
144. **Precision Spectroscopy of Atomic Hydrogen**
A. Beyer, Ch.G. Parthey, N. Kolachevsky, J. Alnis, K. Khabarova, R. Pohl, E. Peters, D.C. Yost, A. Matveev, K. Predehl, S. Droste, T. Wilken, R. Holzwarth, T.W. Hänsch, M. Abgrall, D. Rovera, Ch. Salomon, Ph. Laurent and Th. Udem, *J. of Phys.: Conference Series* 467 012003 (2013).
143. **A Frequency Comb calibrated Solar Atlas**
P. Molaro, M. Esposito, S. Monai, G. Lo Curto, J.I. González Hernández, T.W. Hänsch, R. Holzwarth, A. Manescau, L. Pasquini, R.A. Probst, R. Rebolo, T. Steinmetz, Th. Udem, and T. Wilken, *Astr. & Astrophys.* 560, A61 (2013).
142. **Compact High-Repetition-Rate Source of Coherent 100 eV Radiation**
I. Pupeza, S. Holzberger, T. Eidam, H. Carstens, D. Esser, J. Weitenberg, P. Rußbüldt, J. Rauschenberger, J. Limpert, Th. Udem, A. Tünnermann, T.W. Hänsch, A. Apolonski, F. Krausz and E. Fill, *Nat. Phot.* 7, 608 (2013).
141. **Precision Spectroscopy of the 2S-4P Transition in atomic Hydrogen on a cryogenic Beam of optically Excited 2S Atoms**
Axel Beyer, Janis Alnis, Ksenia Khabarova, Arthur Matveev, Christian G. Parthey, Dylan C. Yost, Randolph Pohl, Thomas Udem, Theodor W. Hänsch, and Nikolai Kolachevsky, *Ann. Phys. (Berlin)* 525, 671 (2013).
140. **Frequency-Comb Spectroscopy of the Hydrogen 1S-3S and 1S-3D Transitions**
Elisabeth Peters, Dylan C. Yost, Arthur Matveev, Theodor W. Hänsch, and Thomas Udem, *Ann. Phys. (Berlin)* 525, L29 (2013).
139. **Precision Measurement of the Hydrogen 1S-2S Frequency via a 920-km Fiber Link**
Arthur Matveev, Christian G. Parthey, Katharina Predehl, Janis Alnis, Axel Beyer, Ronald Holzwarth, Thomas Udem, Tobias Wilken, Nikolai Kolachevsky, Michel Abgrall, Daniele Rovera, Christophe Salomon, Philippe Laurent, Gesine Grosche, Osama Terra, Thomas Legero, Harald Schnatz, Stefan Weyers, Brett Altschul, and Theodor W. Hänsch, *Phys. Rev. Lett.* 110, 230801 (2013).
138. **Laserlineal für den Kosmos**
Rafael A. Probst, Tobias Wilken, Tilo Steinmetz, Thomas Udem, *Physik in unserer*

Zeit, 44, 128 (2013).

137. **Nonlinear Amplification of Side-Modes in Frequency Combs**
R.A. Probst, T. Steinmetz, T. Wilken, H. Hundertmark, S.P. Stark, G.K.L. Wong, P.St.J. Russell, T.W. Hänsch, R. Holzwarth, and Th. Udem, *Opt. Expr.* 21, 11670 (2013).
136. **Real-Time Dual Frequency Comb Spectroscopy in the Near Infrared**
F. Zhu, T. Mohamed, J. Strohaber, A.A. Kolomenskii, Th. Udem, and H.A. Schuessler, *Appl. Phys. Lett.* 102, 121116 (2013).
135. **Astronomical Spectrograph Calibration at the Exo-Earth Detection Limit**
Gaspare Lo Curto, Luca Pasquini, Antonio Manescau, Ronald Holzwarth, Tilo Steinmetz, Tobias Wilken, Rafael Probst, Thomas Udem, Theodor W. Hänsch, Jonay González, Hernández, Massimiliano Esposito, Rafael Rebolo, Bruno Canto Martins, and Jose Renan de Medeiros, *The Messenger* 149 September 2012, p. 2
134. **Durchkämmtte Spektren**
Thomas Udem, *Physik Journal* p. 45, Juli 2012.
133. **A Spectrograph for Exoplanet Observations Calibrated at the centimetre-per-second Level**
Tobias Wilken, Gaspare Lo Curto, Rafael A. Probst, Tilo Steinmetz, Antonio Manescau, Luca Pasquini, Jonay I. González Hernández, Rafael Rebolo, Theodor W. Hänsch, Thomas Udem, and Ronald Holzwarth, *Nature* 485, 611 (2012).
132. **A 920-Kilometer Optical Fiber Link for Frequency Metrology at the 19th Decimal Place**
K. Predehl, G. Grosche, S.M.F. Raupach, S. Droste, O. Terra, J. Alnis, Th. Legero, T.W. Hänsch, Th. Udem, R. Holzwarth, H. Schnatz, *Science* 336, 441 (2012).
131. **Sub-millikelvin spatial Thermometry of a single Doppler-cooled Ion in a Paul Trap**
S. Knünz, M. Herrmann, V. Batteiger, G. Saathoff, T.W. Hänsch, and Th. Udem, *Phys. Rev. A* 85, 023427 (2012).
130. **Vacuum ultraviolet Frequency Combs generated by a femtosecond enhancement Cavity in the Visible**
Birgitta Bernhardt, Akira Ozawa, Andreas Vernaleken, Ioachim Pupeza, Jan Kaster, Yohei Kobayashi, Ronald Holzwarth, Ernst Fill, Ferenc Krausz, Theodor W. Hänsch, and Thomas Udem, *Opt. Lett.* 37, 503 (2012).
129. **Comment on: “Lorentz violation in high-energy ions” by Santosh Devasia**
G. Saathoff, S. Reinhardt, R. Holzwarth, T.W. Hänsch, Th. Udem, D. Bing, D. Schwalm, A. Wolf, S. Karpuk, G. Huber, C. Novotny, B. Botermann, C. Geppert, W. Nörtershäuser, T. Kühl, T. Stöhlker, and G. Gwinner, *Eur. Phys. J. C* 71, 1596 (2011).
128. **Improved Measurement of the Hydrogen 1S-2S Transition Frequency**
Christian G. Parthey, Arthur Matveev, Janis Alnis, Birgitta Bernhardt, Axel Beyer, Ronald Holzwarth, Aliaksei Maistrou, Randolph Pohl, Katharina Predehl, Thomas Udem, Tobias Wilken, Nikolai Kolachevsky, Michel Abgrall, Daniele Rovera, Christophe Salomon, Philippe Laurent, and Theodor W. Hänsch, *Phys. Rev. Lett.* 107, 203001 (2011).
127. **Single-Pass High-Harmonic Generation at 20.8 MHz Repetition Rate**

- A. Vernaleken, J. Weitenberg, Th. Sartorius, P. Russbuedt, W. Schneider, S.L. Stebbings, M.F. Kling, P. Hommelhoff, H.D. Hoffmann, R. Poprawe, F. Krausz, T.W. Hänsch, and Th. Udem, *Opt. Lett.* 36, 3428 (2011).
126. **14 GHz visible Supercontinuum Generation: Calibration Sources for Astronomical Spectrographs**
S.P. Stark, T. Steinmetz, R.A. Probst, H. Hundertmark, T. Wilken, T.W. Hänsch, Th. Udem, P.St.J. Russell, and R. Holzwarth, *Opt. Express* 19, 15690 (2011).
125. **Physics of Fundamental Symmetries and Interactions-PSI2010 Neutron Bound β -Decay-BOB**
W. Schott, S. Paul, M. Berger, R. Emmerich, R. Engels, T. Faestermann, P. Fierlinger, M. Gabriell, E. Gutmiedl, F.J. Hartmann, R. Hertzenberger, A. Röhrmoser, S. Ruschel, J. Schön, U. Schubert, A. Trautner, T. Udem, A. Ulrich, *Physics Procedia* 17, 191 (2011).
124. **Hydrogen-Deuterium Isotope Shift: From the 1S–2S-Transition Frequency to the Proton-Deuteron Charge-Radius Difference**
U.D. Jentschura, A. Matveev, C.G. Parthey, J. Alnis, R. Pohl, Th. Udem, N. Kolachevsky, and T.W. Hänsch, *Phys. Rev.* 83, 042505 (2011).
123. **Highly sensitive Dispersion Measurement of a high-power passive optical Resonator using Spatial-Spectral Interferometry**
I. Pupeza, X. Gu, E. Fill, T. Eidam, J. Limpert, A. Tünnermann, F. Krausz, and Th. Udem, *Opt. Express* 18, pp. 26184 (2010).
122. **Injection Locking of a Trapped-Ion Phonon Laser**
S. Knünz, M. Herrmann, V. Batteiger, G. Saathoff, T.W. Hänsch, K. Vahala, and Th. Udem, *Phys. Rev. Lett.* 105, 013004 (2010).
121. **Modeling and Optimization of Single-Pass Laser Amplifiers for high-Repetition-Rate Laser Pulses**
A. Ozawa, Th. Udem, U.D. Zeitner, T.W. Hänsch, and P. Hommelhoff, *Phys. Rev. A* 82, 82, 033815 (2010).
120. **High-Precision Calibration of Spectrographs**
T. Wilken, C. Lovis, A. Manescau, T. Steinmetz, L. Pasquini, G. Lo Curto, T.W. Hänsch, R. Holzwarth, Th. Udem, *Mon. Not. R. Astron. Soc. Lett.* 405, L16 (2010).
119. **Power Scaling of a High-Repetition-Rate enhancement Cavity**
I. Pupeza, T. Eidam, J. Rauschenberger, B. Bernhardt, A. Ozawa, E. Fill, A. Apolonski, Th. Udem, J. Limpert, Z.A. Alahmed, A.M. Azzeer, A. Tünnermann, T.W. Hänsch, and F. Krausz, *Opt. Lett.* 35, 2052 (2010).
118. **A Peltier Cooled Single Pass Amplifier for Titanium:Sapphire Laser Pulses**
A. Ozawa, W. Schneider, F. Najafi, T.W. Hänsch, Th. Udem, and P. Hommelhoff, *Las. Phys.* 20 967 (2010).
117. **Precision Measurement of the Hydrogen-Deuterium 1S–2S Isotope Shift**
C.G. Parthey, A. Matveev, J. Alnis, R. Pohl, Th. Udem, U.D. Jentschura, N. Kolachevsky, and T.W. Hänsch, *Phys. Rev. Lett.* 104, 233001 (2010).
116. **Two-Photon direct Frequency Comb Spectroscopy with chirped Pulses**
S. Reinhardt, E. Peters, T.W. Hänsch, and Th. Udem, *Phys. Rev. A* 81, 033427 (2010).

115. **Ultraviolet Enhancement Cavity for Ultrafast nonlinear Optics and high-rate Multiphoton Entanglement Experiments**
Roland Krischek, Witlef Wicczorek, Akira Ozawa, Nikolai Kiesel, Patrick Michelberger, Thomas Udem and Harald Weinfurter, *Nature Photonics* 4, 170 (2010).
114. **Cavity-Enhanced Dual-Comb Spectroscopy**
Birgitta Bernhardt, Akira Ozawa, Patrick Jacquet, Marion Jacquey, Yohei Kobayashi, Thomas Udem, Ronald Holzwarth, Guy Guelachvili, Theodor W. Hänsch and Nathalie Picqué, *Nature Photonics* 4, 55 (2010).
113. **Testing the Stability of the Fine Structure Constant in the Laboratory**
N. Kolachevsky, A. Matveev, J. Alnis, C.G. Parthey, T. Steinmetz, T. Wilken, R. Holzwarth, Th. Udem, and T.W. Hänsch, *Space Science Reviews* 148, 267 (2009).
112. **Phase-Coherent Frequency Comparison of Optical Clocks Using a Telecommunication Fiber Link**
Harald Schnatz, Osama Terra, Katharina Predehl, Thorsten Feldmann, Thomas Legero, Burghard Lipphardt, Uwe Sterr, Gesine Grosche, Ronald Holzwarth, Theodor W. Hänsch, Thomas Udem, Zehuang H. Lu, Li J. Wang, Wolfgang Ertmer, Jan Friebe, Andr Pape, Ernst-M. Rasel, Mathias Riedmann, and Temmo Wbbena, *IEEE Trans. Ultrasonics Ferroelectr. Freq. Control*, 57, 175 (2009).
111. **A Phonon Laser**
K. Vahala, M. Herrmann, S. Knünz, V. Batteiger, G. Saathoff, T.W. Hänsch and Th. Udem, *Nature Physics* 5, 682 (2009).
110. **Phase-Stable Single-Pass Cryogenic Amplifier for High Repetition Rate Few-Cycle Laser Pulses**
Akira Ozawa, Waldemar Schneider, Theodor W Hänsch, Thomas Udem and Peter Hommelhoff, *New J. Phys.* 11, 083029 (2009).
109. **High Resolution Wavelength Calibration: Advancements with the Laser Frequency Comb Development**
A. Manescau, C. Araujo-Hauck, L. Pasquini, M.T. Murphy, Th. Udem, T.W. Hänsch, R. Holzwarth, A. Sizmann, H. Dekker and S. D’Odorico, *Science with the VLT in the ELT Era*, A. Moorwood ed., Springer, Amsterdam p. 411 (2009).
108. **Precision Spectroscopy of the $3s - 3p$ Fine-Structure Doublet in Mg^+**
V. Batteiger, S. Knünz, M. Herrmann, G. Saathoff, H.A. Schüssler, B. Bernhardt, T. Wilken, R. Holzwarth, T.W. Hänsch, and Th. Udem, *Phys. Rev. A* 80, 022503 (2009).
107. **Femtosecond Optical Frequency Combs**
Th. Udem, R. Holzwarth, Th. Hänsch, *Eur. Phys. J. Special Topics* 172, 69 (2009).
106. **FabryPérot Filter Cavities for Wide-Spaced Frequency Combs with Large Spectral Bandwidth**
T. Steinmetz, T. Wilken, C. Araujo-Hauck, R. Holzwarth, T.W. Hänsch and Th. Udem, *Appl. Phys B* 69, 251 (2009).
105. **Feasibility of Coherent XUV Spectroscopy on the $1S-2S$ Transition in Singly Ionized Helium**
M. Herrmann, M. Haas, U.D. Jentschura, F. Kottmann, D. Leibfried, G. Saathoff, C. Gohle, A. Ozawa, V. Batteiger, S. Knünz, N. Kolachevsky, H.A. Schüssler, T.W. Hänsch, and Th. Udem, *Phys. Rev A.* 79, 052505 (2009).

104. **A deep-UV Optical Frequency Comb at 205 nm**
E. Peters, S.A. Diddams, P. Fendel, S. Reinhardt, T.W. Hänsch, and Th. Udem, *Opt. Express* 17, 9183 (2009).
103. **Frequency Comb Benefits**
Th. Udem, *Nature Photonics* 3, 82 (2009).
102. **Frequency Metrology on Single Trapped Ions in the Weak Binding Limit: The $3s_{1/2} - 3p_{3/2}$ Transition in $^{24}\text{Mg}^+$**
M. Herrmann, V. Batteiger, S. Knünz, G. Saathoff, Th. Udem, and T.W. Hänsch, *Phys. Rev. Lett.* 102, 013006 (2009).
101. **Laser Frequency Combs for Astronomical Observations**
Tilo Steinmetz, Tobias Wilken, Constanza Araujo-Hauck, Ronald Holzwarth, Theodor W. Hänsch, Luca Pasquini, Antonio Manescau, Sandro D’Odorico, Michael T. Murphy, Thomas Kentischer, Wolfgang Schmidt, and Thomas Udem, *Science* 321, 1335 (2008).
100. **High Harmonic Frequency Combs for High Resolution Spectroscopy**
A. Ozawa, J. Rauschenberger, Ch. Gohle, M. Herrmann, D.R. Walker, V. Pervak, A. Fernandez, R. Graf, A. Apolonski, R. Holzwarth, F. Krausz, T.W. Hänsch, and Th. Udem, *Phys. Rev. Lett.* 100, 253901 (2008).
99. **Subhertz Linewidth Diode Lasers by Stabilization to vibrationally and thermally compensated Ultralow-Expansion glass Fabry-Prot Cavities**
J. Alnis, A. Matveev, N. Kolachevsky, Th. Udem, and T.W. Hänsch, *Phys. Rev. A* 77, 053809 (2008).
98. **Frequency Comb Applications and Optical Frequency Standards**
Th. Udem and F. Riehle, *Revista del Nouvo Cimento* 30, 563 (2007).
97. **Non-Collinear High Harmonic Generation: A promising Outcoupling Method for Cavity-assisted XUV Generation**
A. Ozawa, A. Vernaleken, W. Schneider, I. Gotlibovych, Th. Udem, and T.W. Hänsch, *Opt. Express.* 16, 6233 (2008).
96. **Frequency Comb Vernier Spectroscopy for Broadband, High-Resolution, High-Sensitivity Absorption and Dispersion Spectra**
Ch. Gohle, B. Stein, A. Schliesser, Th. Udem, and T.W. Hänsch, *Phys. Rev. Lett.* 99, 263902 (2007).
95. **Frequency Dependence of the Fixed Point in a Fluctuating Frequency Comb**
D.R. Walker, Th. Udem, Ch. Gohle, B. Stein, and T.W. Hänsch, *Appl. Phys. B* 89, 535 (2007).
94. **Test of Relativistic Time Dilation with fast Optical Atomic Clocks at Different Velocities**
Sascha Reinhardt, Guido Saathoff, Henrik Buhr, Lars A. Carlson, Andreas Wolf, Dirk Schwalm, Sergei Karpuk, Christian Novotny, Gerhard Huber, Marcus Zimmermann, Ronald Holzwarth, Thomas Udem, Theodor W. Hänsch and Gerald Gwinner, *Nature Physics* 3, 861 (2007).
93. **Frequency Comb Applications and Optical Frequency Standards**
Th. Udem and F. Riehle, *Proceedings of the International School of Physics “Enrico Fermi”*, T.W. Hänsch, S. Leschiutta and A.J. Wallard eds., IOS Press, Amsterdam p. 317 (2007).

92. **High-Precision Wavelength Calibration of Astronomical Spectrographs with Laser Frequency Combs**
M.T. Murphy, Th. Udem, R. Holzwarth, A. Sismann, L. Pasquini, C. Araujo-Hauck, H. Dekker, S. D'Odorico, M. Fischer, T.W. Hänsch and A. Manescau, *Mon. Not. R. Astron. Soc.* 380, 839 (2007).
91. **Absolute Frequency Measurements and Comparisons in Iodine at 735 nm and 772 nm**
S. Reinhardt, B. Bernhardt, C. Geppert, R. Holzwarth, G. Huber, S. Karpuk, N. Miski-Oglu, W. Nörtershäuser, C. Novotny, Th. Udem, *Opt. Commun.* 274, 354 (2007).
90. **Two-photon Frequency Comb Spectroscopy of the 6s-8s Transition in Cesium**
P. Fendel, S.D. Bergeson, Th. Udem, and T.W. Hänsch, *Opt. Lett.* 32, 791 (2007).
89. **Experimental Test of Special Relativity by Laser Spectroscopy**
C. Novotny, B. Bernhardt, G. Ewald, C. Geppert, G. Gwinner, T.W. Hänsch, R. Holzwarth, G. Huber, S. Karpuk, H.J. Kluge, T. Kühl, W. Nörtershäuser, S. Reinhardt, G. Saathoff, D. Schwalm, Th. Udem and A. Wolf, *Hyperfine Interactions* 57, 171 (2006).
88. **Photoionization Broadening of the 1S–2S Transition in a Beam of Atomic Hydrogen**
N. Kolachevsky, M. Haas, U.D. Jentschura, M. Herrmann, P. Fendel, M. Fischer, R. Holzwarth, Th. Udem, C.H. Keitel, and T.W. Hänsch, *Phys. Rev. A* 74, 052504 (2006).
87. **Optische Frequenzkämme und der Physiknobelpreis 2005**
M. Zimmermann, Ch. Gohle, P. Fendel, M. Herrmann, K. Predehl, B. Bernhardt, B. Stein, D. Walker, R. Holzwarth, Th. Udem und T.W. Hänsch, *Praxis der Naturwissenschaften, Physik in der Schule* 55, 38 (2006).
86. **High Power all Solid State Laser System near 280 nm**
A. Friedenauer, F. Markert, H. Schmitz, L. Petersen, S. Kahra, M. Herrmann, Th. Udem, T.W. Hänsch and T. Schätz, *Appl. Phys. B* 84, 371 (2006).
85. **Complete Characterization of a Broadband High-Finesse Cavity using an Optical Frequency Comb**
Albert Schliesser, Christoph Gohle, Thomas Udem and Theodor W. Hänsch, *Opt. Express* 14, 5975 (2006).
84. **Two-Photon Excitation Dynamics in Bound Two-Body Coulomb Systems including ac Stark Shift and Ionization**
M. Haas, U.D. Jentschura, C. H. Keitel, N. Kolachevsky, M. Herrmann, P. Fendel, M. Fischer, Th. Udem, R. Holzwarth, T.W. Hänsch, M.O. Scully, and G.S. Agarwal, *Phys. Rev. A* 73, 052501 (2006).
83. **Iodine Hyperfine Structure and absolute Frequency Measurements at 565, 576, and 585 nm**
S. Reinhardt, G. Saathoff, S. Karpuk, C. Novotny, G. Huber, M. Zimmermann, R. Holzwarth, Th. Udem, T.W. Hänsch and G. Gwinner, *Opt. Commun.* 261, 282 (2006).
82. **Constant Insights from Recoils**
Thomas Udem, *Nature Physics* 2, 153 (2006).
81. **Carrier Phase-Stabilized Amplifier System**

- J. Rauschenberger, T. Fuji, M. Hentschel, A.J. Verhoef, T. Udem, C. Gohle, T.W. Hänsch, and F. Krausz, *Laser Phys. Lett.* 3, 37 (2006).
80. **Der lange Weg zur optischen Uhr**
Fritz Haake und Thomas Udem, *Physik in unserer Zeit*, 6, 258 (2005).
79. **Precision Spectroscopy of Hydrogen and Femtosecond Frequency Combs**
T.W. Hänsch, J. Alnis, P. Fendel, M. Fischer, C. Gohle, M. Herrmann, R. Holzwarth, N. Kolachevsky, Th. Udem, and M. Zimmermann, *Phil. Trans. R. Soc. A* 363, 2115 (2005).
78. **Carrier Envelope Phase Noise in Stabilized Amplifier Systems**
Christoph Gohle, Jens Rauschenberger, Takao Fuji, Thomas Udem, Alexander Apolonski, Ferenc Krausz, Theodor W. Hänsch, *Opt. Lett.* 30, 2487 (2005)
77. **A Frequency Comb in the Extreme Ultraviolet**
Christoph Gohle, Thomas Udem, Maximilian Herrmann, Jens Rauschenberger, Ronald Holzwarth, Hans A. Schuessler, Ferenc Krausz, and Theodor W. Hänsch, *Nature* 436, 234 (2005).
76. **Optical Frequency Measurement**
Thomas Udem, Marcus Zimmermann, Ronald Holzwarth, Marc Fischer, Nikolai Kolachevsky, and Theodor Hänsch, *Femtosecond Optical Frequency Comb: Principle, Operation and Applications*, J. Ye and S. T. Cundiff eds., Springer Verlag Berlin, Heidelberg, p. 176 (2005).
75. **High-Resolution Laser Spectroscopy and Time Variation of Fundamental Constants**
M. Zimmermann, M. Fischer, N. Kolachevsky, R. Holzwarth, Th. Udem, T.W. Hänsch, M. Abgrall, J. Grünert, I. Maksimovic, S. Bize, H. Marion, F. Pereira Dos Santos, P. Lemonde, G. Santarelli, P. Laurent, A. Clairon, and C. Salomon, *Laser Physics* 15, 997 (2005).
74. **Atomuhr im optischen Gitter**
Thomas Udem, *Physik Journal* p. 19, Juli 2005.
73. **Light-Insensitive Optical Clock**
Th. Udem, *Nature* 435, 291 (2005).
72. **Attosecond Control of Optical Waveforms**
T. Fuji, J. Rauschenberger, Ch. Gohle, A. Apolonski, Th. Udem, V.S. Yakovlev, G. Tempea, T.W. Hänsch, and F. Krausz, *New J. of Phys.* 7, 116 (2005).
71. **Monolithic Carrier-Envelope Phase-Stabilization Scheme**
T. Fuji, J. Rauschenberger, A. Apolonski, V.S. Yakovlev, G. Tempea, Th. Udem, Ch. Gohle, T.W. Hänsch, W. Lehnert, M. Scherer and F. Krausz, *Opt. Lett.* 30, 332 (2005).
70. **Short and Sharp-Spectroscopy with Frequency Combs**
Thomas Udem, *Science* 307, 364 (2005).
69. **Optical Frequency-Comb Generation and High-Resolution Laser Spectroscopy**
Thomas Udem, Ronald Holzwarth, Marcus Zimmermann, Christoph Gohle, and Theodor Hänsch, *Topics in Applied Physics: Few-Cycle Pulse Generation and its Application*, F. X. Kärtner ed., Springer Verlag Berlin, Heidelberg vol. 95, p. 295 (2005).

68. **Precision Spectroscopy of Atomic Hydrogen and Variations of Fundamental Constants**
M. Fischer, N. Kolachevsky, M. Zimmermann, R. Holzwarth, Th. Udem, T.W. Hänsch, M. Abgrall, J. Grünert, I. Maksimovic, S. Bize, H. Marion, F. Pereira Dos Santos, P. Lemonde, G. Santarelli, P. Laurent, A. Clairon, and C. Salomon, *Lecture Notes in Physics: Astrophysics, Clocks and Fundamental Constants*, S.G. Karshenboim and E. Peik.eds., Springer Verlag Berlin, Heidelberg vol. 648, p. 209 (2004).
67. **New Limits on the Drift of Fundamental Constants from Laboratory Measurements**
M. Fischer, N. Kolachevsky, M. Zimmermann, R. Holzwarth, Th. Udem, T.W. Hänsch, M. Abgrall, J. Grünert, I. Maksimovic, S. Bize, H. Marion, F. Pereira Dos Santos, P. Lemonde, G. Santarelli, P. Laurent, A. Clairon, C. Salomon, M. Haas, U.D. Jentschura, and C.H. Keitel, *Phys. Rev. Lett.* 92, 230802 (2004).
66. **Direct Measurement and Analysis of the Carrier-Envelope Phase in Light Pulses approaching the Single-Cycle Regime**
P. Dombi, A. Apolonski, Ch. Lemell, G.G. Paulus, M. Kakehata, R. Holzwarth, Th. Udem, K. Torizuka, J. Burgdörfer, T.W. Hänsch, and F. Krausz, *New J. of Phys.* 6, 39 (2004).
65. **Observation of Light-Phase-Sensitive Photoemission from a Metal**
A. Apolonski, P. Dombi, G.G. Paulus, M. Kakehata, R. Holzwarth, Th. Udem, Ch. Lemell, K. Torizuka, J. Burgdörfer, T.W. Hänsch, and F. Krausz, *Phys. Rev. Lett.* 92, 073902 (2004).
64. **Optical Clockwork with an offset-free Difference-Frequency Comb: Accuracy of Sum- and Difference-Frequency Generation**
M. Zimmermann, Ch. Gohle, R. Holzwarth, Th. Udem, and T.W. Hänsch, *Opt. Lett.* 29, 310 (2004).
63. **Phase-controlled Amplification of few-cycle Laser Pulses**
A. Baltuška, M. Uiberacker, E. Goulielmakis, R. Kienberger, V.S. Yakovlev, Th. Udem, T.W. Hänsch, and F. Krausz, *IEEE J. Select. Topics Quantum Electron.* 9, 972 (2003).
62. **Phase-Stabilized 4-fs Pulses at the full Oscillator Repetition Rate for a Photoemission Experiment**
V.S. Yakovlev, P. Dombi, G. Tempea, C. Lemell, J. Burgdörfer, Th. Udem, and A. Apolonski, *Appl. Phys. B* 76, 329 (2003).
61. **Attosecond Control of Electronic Processes by Intense Light Fields**
A. Baltuška, Th. Udem, M. Uiberacker, M. Hentschel, E. Goulielmakis, Ch. Gohle, R. Holzwarth, V. S. Yakovlev, A. Scrinzi, T.W. Hänsch, and F. Krausz, *Nature* 421, 611 (2003).
60. **Rabi Flopping sees the Light**
Th. Udem, *Nature* 420, 469 (2002).
59. **A Single-Ion Optical Clock**
J. Bergquist, S.A. Diddams, C. Oates, E. Curtis, L. Hollberg, R. Drullinger, W. Itano, D. Wineland, and Th. Udem, *Proceedings of the XV International Conference on Laser Spectroscopy (ICOLS)*, S. Chu, V. Vuletić, A.J. Kerman and C. Chin eds., World Scientific Singapore p. 106 (2001).
58. **Measuring the Frequency of Light with Ultra short Pulses**

- T.W. Hänsch, R. Holzwarth, M. Zimmermann, and Th. Udem, Proceedings of the XV International Conference on *Laser Spectroscopy (ICOLS)*, S. Chu, V. Vuletić, A. J. Kerman and C. Chin eds., World Scientific Singapore p. 88 (2001).
57. **Ultrafast Mode-locked Lasers for the Measurement of Laser Frequencies and as Optical Clockworks**
Ronald Holzwarth, Thomas Udem, and Theodor W. Hänsch, *ICO International Trends in Applied Optics*, A. H. Guenther ed., SPIE press, Bellingham Washington USA vol. 5, p. 23 (2002).
56. **Frequency Comparison of I₂ stabilized Lasers at 532 nm and absolute optical Frequency Measurement of the I₂ 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, Proceedings of the Sixth Symposium on *Frequency Standards and Metrology*, P. Gill ed., World Scientific, Singapore p. 521 (2002).
55. **Absolute Frequency Measurements of a Methane-Stabilized Transportable He-Ne Laser at 3.39 μm**
P.V. Pokasov, R. Holzwarth, Th. Udem, J. Reichert, M. Niering, M. Zimmermann, M. Weitz, T.W. Hänsch, A.K. Dmitriev, S.N. Bagayev, P. Lemonde, G. Santarelli, P. Laurent, M. Abgrall, A. Clairon, and C. Salomon, Proceedings of the Sixth Symposium on *Frequency Standards and Metrology*, P. Gill ed., World Scientific, Singapore p. 510 (2002).
54. **A Femtosecond-Laser-Based Optical Clockwork**
S.A. Diddams, Th. Udem, K.R. Vogel, L.-S. Ma, L. Robertsson, C.W. Oates, E.A. Curtis, W.M. Itano, R.E. Drullinger, D.J. Wineland, J.C. Bergquist, and L. Hollberg, Proceedings of the Sixth Symposium on *Frequency Standards and Metrology*, P. Gill ed., World Scientific, Singapore p. 419 (2002).
53. **A ⁴⁰Ca Optical Frequency Standard at 657nm: Frequency Measurements and Future Prospects**
E.A. Curtis, C.W. Oates, S.A. Diddams, K.R. Vogel, L. Hollberg, and Th. Udem, Proceedings of the Sixth Symposium on *Frequency Standards and Metrology*, P. Gill ed., World Scientific, Singapore p. 331 (2002).
52. **Optical Frequency Synthesis with Ultrashort Pulses**
Th. Udem, R. Holzwarth, M. Zimmermann, and T.W. Hänsch, Proceedings of the Sixth Symposium on *Frequency Standards and Metrology*, P. Gill ed., World Scientific, Singapore p. 125 (2002).
51. **A Mercury-Ion Optical Clock**
J.C. Bergquist, U. Tanaka, R.E. Drullinger, W.M. Itano, D.J. Wineland, S.A. Diddams, L. Hollberg, E.A. Curtis, C.W. Oates, and Th. Udem, Proceedings of the Sixth Symposium on *Frequency Standards and Metrology*, P. Gill ed., World Scientific, Singapore p. 99 (2002).
50. **Optical Frequency Metrology**
Th. Udem, R. Holzwarth, and T.W. Hänsch, *Nature* 416, 233 (2002).
49. **Uhrenvergleich auf der Femtosekundenskala**
Thomas Udem, Ronald Holzwarth, Theodor W. Hänsch, *Physik Journal* p. 39, Februar 2002.

48. **Precision Optical Frequency Metrology using Pulsed Lasers**
Th. Udem, R. Holzwarth, M. Zimmermann, and T.W. Hänsch, Proceedings of the 7th international symposium on *Foundations of Quantum Mechanics in the Light of New Technology (ISQM01)*, ed. Y. A. Ono, and K. Fujikawa, World Scientific Singapore p. 253 (2002).
47. **Measuring the Frequency of Light with Ultrashort Pulses**
T.W. Hänsch, R. Holzwarth, J. Reichert, M. Zimmermann, and Th. Udem, Proceedings of the 15th *European Frequency and Time Forum (EFTF01)*, L. G. Bernier ed., p. 15 (2001).
46. **High Resolution Spectroscopy of Atomic Hydrogen**
M. Fischer, M. Niering, R. Holzwarth, J. Reichert, Th. Udem, M. Weitz, and T.W. Hänsch, Proceedings of the XV *International Conference on Spectral Line Shapes (IC-SLS00)*, J. Seidel ed., AIP Conference Proceedings vol. 559, p. 249 (2001).
45. **Optical Frequency Standards and Measurements**
L. Hollberg, C.W. Oates, E.A. Curtis, E.N. Ivanov, S.A. Diddams, Th. Udem, H.G. Robinson, J.C. Bergquist, R.J. Rafac, W.M. Itano, R.E. Drullinger, and D.J. Wineland, *IEEE J. of Quant. Electr.* 37, 1502 (2001).
44. **Optical Clockworks and the Measurement of Laser Frequencies with a Mode-Locked Frequency Comb**
R. Holzwarth, M. Zimmermann, Th. Udem, and T.W. Hänsch, *IEEE J. of Quant. Electr.* 37, 1493 (2001).
43. **Measuring the Frequency of Light with a Femtosecond Laser Frequency Comb**
T.W. Hänsch, R. Holzwarth, J. Reichert, and Th. Udem, Proceedings of the *International School of Physics "Enrico Fermi"*, T.J. Quinn, S. Leschiutta and P. Tavella eds., IOS Press, Amsterdam p. 747 (2001).
42. **Achievements in Optical Frequency Metrology**
Thomas Udem and Allister I. Ferguson, *Laser Physics at the Limits*, H. Figger, D. Meschede, C. Zimmermann eds., Springer Verlag, Berlin, Heidelberg p. 9 (2001).
41. **Absolute Frequency Measurement of Iodine Lines with a Femtosecond Optical Synthesizer**
R. Holzwarth, A. Yu. Nevsky, M. Zimmermann, Th. Udem, T.W. Hänsch, J. von Zanthier, H. Walther, J.C. Knight, W.J. Wadsworth, P.St.J. Russell, M.N. Skvortsov, and S.N. Bagayev, *Appl. Phys. B* 73, 269 (2001).
40. **Absolute Frequency Measurement of the In⁺ Clock Transition with a Mode-Locked Femtosecond Laser**
J. von Zanthier, Th. Becker, M. Eichenseer, A.Yu. Nevsky, Ch. Schwedes, E. Peik, H. Walther, R. Holzwarth, J. Reichert, Th. Udem, T.W. Hänsch, P.V. Pokasov, M.N. Skvortsov, and S. N. Bagayev, *Laser Physics* 11, 1117 (2001).
39. **A New Type of Frequency Chain and its Application to Optical Frequency Metrology**
R. Holzwarth, J. Reichert, Th. Udem, and T.W. Hänsch, *Laser Physics* 11, 1100 (2001).
38. **All-Optical Atomic Clocks**
R.E. Drullinger, Th. Udem, S.A. Diddams, K.R. Vogel, C.W. Oates, E.A. Curtis, W.D. Lee, W.M. Itano, L. Hollberg, J.C. Bergquist, Proceedings of the 2001 *IEEE*

International Frequency Control Symposium (FCS01), p. 69 (2001).

37. **An Optical Clock Based on a Single Trapped $^{199}\text{Hg}^+$ Ion**
S.A. Diddams, Th. Udem, J.C. Bergquist, E.A. Curtis, R.E. Drullinger, L. Hollberg, W.M. Itano, W.D. Lee, C.W. Oates, K.R. Vogel, and D.J. Wineland, *Science* 293, 825 (2001).
36. **White-Light Frequency Comb Generation with a Diode-Pumped Cr:LiSAF Laser**
R. Holzwarth, M. Zimmermann, Th. Udem, T.W. Hänsch, P. Russbüldt, K. Gäbel, R. Poprawe, J.C. Knight, W.J. Wagsworth, and P.St.J. Russell, *Opt. Lett.* 26, 1376 (2001).
35. **Frequency Comparison and Absolute Frequency Measurement of I_2 -Stabilized Lasers at 532 nm**
A.Yu. Nevsky, R. Holzwarth, J. Reichert, Th. Udem, T.W. Hänsch, J. von Zanthier, H. Walther, H. Schnatz, F. Riehle, P.V. Pokasov, M.N. Skvortsov, and S.N. Bagayev, *Lecture Notes in Physics, Precision Physics of Simple Atomic Systems*, S. G. Karshenboim, F.S. Pavone, G.F. Bassani, M. Inguscio, and T.W. Hänsch eds., Springer Verlag, Berlin, Heidelberg vol. 627, p. 576 (2001).
34. **Precision Spectroscopy of Atomic Hydrogen**
F. Biraben, T.W. Hänsch, M. Fischer, M. Niering, R. Holzwarth, J. Reichert, Th. Udem, M. Weitz, B. de Beauvoir, C. Schwob, L. Jozefowski, L. Hilico, F. Nez, L. Julien, O. Acef, J.J. Zondy, and A. Clairon, *Lecture Notes in Physics, Precision Physics of Simple Atomic Systems*, S.G. Karshenboim, F.S. Pavone, G.F. Bassani, M. Inguscio, and T.W. Hänsch eds., Springer Verlag, Berlin, Heidelberg vol. 627, p. 17 (2001).
33. **A New Type of Frequency Chain and its Contribution to Fundamental Frequency Metrology**
Thomas Udem, Jörg Reichert, Ronald Holzwarth, Scott Diddams, David Jones, Jun Ye, Steven Cundiff, Theodor Hänsch, and John Hall, *Lecture Notes in Physics, Precision Physics of Simple Atomic Systems*, S. G. Karshenboim, F. S. Pavone, G. F. Bassani, M. Inguscio, and T. W. Hänsch eds., Springer Verlag, Berlin, Heidelberg vol. 627, p. 125. (2001).
32. **Frequency Comparison and Absolute Frequency Measurement of I_2 -Stabilized Lasers at 532 nm**
A.Yu. Nevsky, R. Holtzwarth, J. Reichert, Th. Udem, T.W. Hänsch, J. von Zanthier, H. Walther, H. Schnatz, F. Riehle, P.V. Pokasov, M.N. Skvortsov, and S.N. Bagayev, *Opt. Commun.*, 192, 263 (2001).
31. **Absolute Frequency Measurements of the Hg^+ and Ca Optical Clock Transitions with a Femtosecond Laser**
Th. Udem, S.A. Diddams, K.R. Vogel, C.W. Oates, E.A. Curtis, W.D. Lee, W.M. Itano, R.E. Drullinger, J.C. Bergquist, and L. Hollberg, *Phys. Rev. Lett.* 86, 4996 (2001).
30. **A Compact Femtosecond-Laser-Based Optical Clockwork**
S.A. Diddams, Th. Udem, K.R. Vogel, C. W. Oates, E.A. Curtis, R.S. Windeler, A. Bartels, J.C. Bergquist, and L. Hollberg, *Proceedings of the SPIE, Laser Frequency Stabilization, Standards, Measurement, and Applications*, J.L. Hall, and J. Ye eds., vol. 4269, p. 77 (2001).
29. **Optical Frequency Metrology and its Contribution to the Determination of**

Fundamental Constants

- R. Holzwarth, J. Reichert, Th. Udem, and T.W. Hänsch, Proceedings of the XVII *International Conference on Atomic Physics (ICAP00)*, E. Arimondo, P. De Natale, and M. Inguscio eds., AIP Conference Proceedings vol. 551, p. 58 (2001).
28. **Absolute Optical Frequency Measurement of the In^+ Clock Transition with a Modelocked-Femtosecond Laser**
J. von Zanthier, Th. Becker, M. Eichenseer, A.Yu. Nevsky, Ch. Schwedes, E. Peik, H. Walther, R. Holzwarth, J. Reichert, Th. Udem, T.W. Hänsch, P.V. Pokasov, M.N. Skvortsov, and S.N. Bagayev, Proceedings of the 3rd International Symposium *Modern Problems of Laser Physics (MPLP00)*, S.N. Bagayev, and V.I. Denisov eds., Novosibirsk p. 111 (2000).
 27. **A new Type of Frequency Chain and its Application to Optical Frequency Metrology**
R. Holzwarth, J. Reichert, Th. Udem, and T.W. Hänsch, Proceedings of the 3rd International Symposium *Modern Problems of Laser Physics (MPLP00)*, S.N. Bagayev, and V.I. Denisov eds., Novosibirsk p. 83 (2000).
 26. **Absolute Frequency Measurement of the In^+ Clock Transition with a Mode-Locked Laser**
J. von Zanthier, Th. Becker, M. Eichenseer, A.Yu. Nevsky, Ch. Schwedes, E. Peik, H. Walther, R. Holzwarth, J. Reichert, Th. Udem, T.W. Hänsch, P. V. Pokasov, M.N. Skvortsov, and S.N. Bagayev, *Opt. Lett.* 25, 1729 (2000).
 25. **Absolute Optical Frequency Measurement of the Cesium D_2 Line**
Th. Udem, J. Reichert, T.W. Hänsch, and M. Kourogi, *Phys. Rev. A* 62, 031801 (2000).
 24. **An Optical Frequency Synthesizer for Precision Spectroscopy**
R. Holzwarth, Th. Udem, T.W. Hänsch, J.C. Knight, W.J. Wadsworth, and P.St.J. Russell, *Phys. Rev. Lett.* 85, 2264 (2000).
 23. **Controlling the Phase Evolution of Few-Cycle Light Pulses**
A. Apolonski, A. Poppe, G. Tempea, Ch. Spielmann, Th. Udem, R. Holzwarth, T.W. Hänsch, and F. Krausz, *Phys. Rev. Lett.* 85, 740 (2000).
 22. **Measuring the Frequency of Light with Mode-Locked Lasers**
Thomas Udem, Jörg Reichert, Ronald Holzwarth, Markus Niering, Martin Weitz, and Theodor Hänsch, *Topics in Applied Physics: Advanced Techniques for Frequency Measurement and Control*, A. Luiten ed., Springer Verlag, Berlin, Heidelberg vol. 79, p. 275 (2000).
 21. **Direct Link between Microwave and Optical Frequencies with a 300 THz Femtosecond Laser Comb**
S.A. Diddams, D.J. Jones, J.Ye, S.T. Cundiff, J.L. Hall, J.K. Ranka, R.S. Windeler, R. Holzwarth, Th. Udem, and T.W. Hänsch, *Phys. Rev. Lett.* 84, 5102 (2000).
 20. **Measurement of the Hydrogen 1S – 2S Transition Frequency by Phase Coherent Comparison with a Microwave Cesium Fountain Clock**
M. Niering, R. Holzwarth, J. Reichert, P. Pokasov, Th. Udem, M. Weitz, T.W. Hänsch, P. Lemonde, G. Santarelli, M. Abgrall, P. Laurent, C. Salomon, and A. Clairon, *Phys. Rev. Lett.* 84, 5496 (2000).
 19. **Phase Coherent Vacuum-Ultraviolet to Radio Frequency Comparison with**

- a Mode-Locked Laser**
J. Reichert, M. Niering, R. Holzwarth, M. Weitz, Th. Udem, and T.W. Hänsch, *Phys. Rev. Lett.* 84, 3232 (2000).
18. **Effect of the 1999 Solar Eclipse on Atomic Clocks**
Thomas Udem, Jörg Reichert, Ronald Holzwarth, Theodor Hänsch, Rainer Krämer, Jörg Hahn, Jens Hammesfahr, *Nature* 402, 749 (1999).
 17. **Measuring the Frequency of Light with Mode-Locked Lasers**
J. Reichert, R. Holzwarth, Th. Udem, and T.W. Hänsch, *Opt. Commun.* 172, 59 (1999).
 16. **Auf dem Weg zur Laser-Uhr**
Thomas Udem, Jörg Reichert, Ronald Holzwarth, Theodor Hänsch, *Physik in unserer Zeit*, 5, 223 (1999).
 15. **Measuring Optical Frequencies with Femtosecond Light Pulses**
R. Holzwarth, J. Reichert, M. Niering, M. Weitz, Th. Udem, and T.W. Hänsch, *Proceedings of the XIV International Conference on Laser Spectroscopy (ICOLS99)*, R. Blatt, J. Eschner, D. Leibfried, and F. Schmidt-Kaler eds., World Scientific, Singapore p. 347 (1999).
 14. **The Measurement of Large Optical Frequency Differences and the Design of a New Type of Frequency Chain**
Thomas Udem, Jörg Reichert, Ronald Holzwarth, Theodor Hänsch and Motonobu Kourogi, *Proceedings of the 1999 Joint Meeting of the European Frequency and Time Forum (EFTF99) and the IEEE International Frequency Control Symposium (FCS99)*, vol. 2, p. 620 (1999).
 13. **Absolute Frequency Measurement of the $^{115}\text{In}^+ 5s^2 1S_0-5s5p 3P_0$ Transition**
J. von Zanthier, J. Abel, Th. Becker, M. Fries, E. Peik, H. Walther, R. Holzwarth, J. Reichert, Th. Udem, T.W. Hänsch, A.Yu. Nevsky, M.N. Skvortsov, and S.N. Bagaev, *Opt. Commun.*, 166, 57 (1999).
 12. **Absolute Optical Frequency Measurement of the Cesium D_1 Line with a Mode Locked Laser**
Th. Udem, J. Reichert, R. Holzwarth, and T.W. Hänsch, *Phys. Rev. Lett.*, 82, 3568 (1999).
 11. **Accurate Measurement of Large Optical Frequency Differences with a Mode-Locked Laser**
Th. Udem, J. Reichert, R. Holzwarth, and T.W. Hänsch, *Opt. Lett.*, 24, 881 (1999).
 10. **Accuracy of Optical Frequency Comb Generators and Optical Frequency Interval Divider Chains**
Th. Udem, J. Reichert, and T.W. Hänsch, *Opt. Lett.*, 23, 1387 (1998).
 9. **Phase-Coherent Frequency Measurement of the Hydrogen $1S-2S$ Transition**
Th. Udem, A. Huber, J. Reichert, B. Gross, M. Prevedelli, M. Weitz, M. Kourogi, and T.W. Hänsch, *Proceedings of the XIII International Conference on Laser Spectroscopy (ICOLS97)*, Z.J. Wang, Z.M. Zhang and Y.Z. Wang eds., World Scientific, Singapore p. 87 (1998).
 8. **Hydrogen-Deuterium $1S-2S$ Isotope Shift and the Structure of the Deuteron**
A. Huber, Th. Udem, B. Gross, J. Reichert, M. Kourogi, K. Pachucki, M. Weitz, and

- T.W. Hänsch, Phys. Rev. Lett., 80, 468 (1998).
7. **Phase-Coherent Measurement of the Hydrogen 1S–2S Transition Frequency with an Optical Frequency Interval Divider Chain**
Th. Udem, A. Huber, B. Gross, J. Reichert, M. Prevedelli, M. Weitz, and T. W. Hänsch, Phys. Rev. Lett., 79, 2646 (1997).
 6. **Phase-Coherent Measurement of the Hydrogen 1S–2S Frequency with an Optical Frequency Interval Divider Chain**
Th. Udem, A. Huber, M. Weitz, D. Leibfried, W. König, M. Prevedelli, A. Dimitriev, H. Geiger, and T.W. Hänsch, IEEE Trans. Instrum. Meas., 46, 166 (1997).
 5. **A Phase-Coherent Frequency Chain Connecting a Methane Stabilized He-Ne Laser to the Hydrogen L- α Transition Frequency**
Th. Udem, A. Huber, M. Weitz, D. Leibfried, W. König, M. Prevedelli, A. Dimitriev, and T.W. Hänsch, Proceedings of the Workshop *Frequency Standards Based on Laser-Manipulated Atoms and Ions*, J. Helmcke and S. Penselin eds., PTB-Opt-51, Braunschweig, p. 77, April 1996.
 4. **Precision Measurements in Atomic Hydrogen**
M. Weitz, D. Leibfried, A. Huber, H. Geiger, W. König, M. Prevedelli, Th. Udem, T. Heupel, K. Pachucki, and T.W. Hänsch, Proceedings of the *Fifth Symposium on Frequency Standards and Metrology*, J. C. Bergquist, ed., World Scientific, Singapore p. 137 (1996).
 3. **Precision Spectroscopy in Atomic Hydrogen**
D. Leibfried, H. Geiger, A. Huber, W. König, K. Pachucki, M. Prevedelli, T. Udem, J. Walz, M. Weitz, C. Zimmermann, and T.W. Hänsch, Proceedings of the XII *International Conference on Laser Spectroscopy (ICOLS95)*, M. Inguscio, M. Allegrini, and A. Sasso eds., World Scientific, Singapore p. 83 (1996).
 2. **Calculated Transmission Line Structures of a Coherent Forward Scattering Resonance Monochromator (CFSRM)**
G. Hermann, T. Udem, K. Hirokawa, and H. Matsuta, Spectr. Chem. Acta B, 4, 355 (1994).
 1. **Theoretical Approach for collisional Depolarization of Rydberg Atoms**
G. Hermann, B. Kaulakys, and T. Udem, Z. Phys. D, 28, 119 (1993).