

Refereed Publications

- *Mapping the magnetic field vector in a fountain clock*, M. Gertszvolf, L. Marmet, Review of Scientific Instruments **82(12)** 123115, 2011
- *Cavity-enhanced optical frequency doubler based on transmission-mode Hänsch-Couillaud locking*, M. Vainio, J.E. Bernard, L. Marmet, Applied Physics B: Lasers and Optics **104(4)** 897, 2011
- *A narrow linewidth and frequency-stable probe laser source for the $^{88}\text{Sr}^+$ single ion optical frequency standard*, P. Dubé, A.A. Madej, J.E. Bernard, L. Marmet, A.D. Shiner, Applied Physics B: Lasers and Optics **95(1)** 43, 2009
- *Laser cooling with a modified optical shaker*, L. Marmet, Physical Review **A 79(1)** 013412, 2009. [arXiv:0901.1671v1](https://arxiv.org/abs/0901.1671v1)
- *Quantum physics exploring gravity in the outer solar system: the SAGAS project*, P. Wolf, Ch.J. Bordé, A. Clairon *et al.*, Experimental Astronomy **23(2)** 651, 2008. [arXiv:0711.0304v5](https://arxiv.org/abs/0711.0304v5)
- *Optical Forces as a Redshift Mechanism: The “Spectral Transfer Redshift”*, L. Marmet, 2nd Crisis in Cosmology Conference, CCC-2, Astronomical Society of the Pacific Conference Series **413**, 268, 2008
- *Laser-Cooled Atoms and Ions in Precision Time and Frequency Standards*, J.E. Bernard, L. Marmet, A.A. Madej, P. Dubé, Physics in Canada **62(2)** 67, 2006
- *Electric quadrupole shift cancellation in single-ion optical frequency standards*, P. Dubé, A.A. Madej, J.E. Bernard, L. Marmet, J.-S. Boulanger, S. Cundy, Physical Review Letters **95(3)**, 033001, 2005
- *Absolute frequency of the $^{88}\text{Sr}^+$ $5s^2S_{1/2} - 4d^2D_{5/2}$ reference transition at 445 THz and evaluation of systematic shifts*, A.A. Madej, J.E. Bernard, P. Dubé, L. Marmet, R.S. Windeler, Physical Review **A 70(1)**, 012507, 2004
- *Absolute Frequency Measurement of a CO_2/OsO_4 stabilised Laser at 28.8 THz*, K.J. Siemsen, J.E. Bernard, A.A. Madej, L. Marmet, Applied Physics B: Lasers and Optics **72(5)** 567, 2001
- *Absolute frequency measurement of the HeNe/I_2 standard at 633 nm*, J.E. Bernard, A.A. Madej, K.J. Siemsen, L. Marmet, Optics Communications **187(1/3)** 211, 2001
- *Accuracy Comparison of Absolute Optical Frequency Measurement between Harmonic-Generation Synthesis and a Frequency-Division Femtosecond Comb*, J. Ye, T.H. Yoon, J.L. Hall *et al.*, Physical Review Letters **85(18)** 3797, 2000
- *Optical Ramsey spectroscopy and coherence measurements of the clock transition in a single trapped Sr ion*, L. Marmet, A.A. Madej, Canadian Journal of Physics, Boris Stoicheff Festschrift Issue **78(5/6)** 495, 2000
- *Effect of counterintuitive time delays in nonlinear mixing*, R.I. Thompson, L. Marmet, B.P. Stoicheff, Optics Letters **25(2)**, 120, 2000
- *Absolute frequency measurement of a laser at 1556 nm locked to the $^5S_{1/2} - ^5D_{5/2}$ two-photon transition in ^{87}Rb* , J.E. Bernard, A.A. Madej, K.J. Siemsen, L. Marmet *et al.*, Optics Communications **173(1/6)** 357, 2000
- *Absolute Frequency Measurement of an HDO Absorption Line near 1480 cm^{-1}* , K.J. Siemsen, J.E. Bernard, A.A. Madej, L. Marmet, Journal of Molecular Spectroscopy **199(1)** 144, 2000
- *Single, trapped ions for absolute optical frequency measurements*, A.A. Madej, J.E. Bernard, L. Marmet, K.J. Siemsen, Newsletter of the Lasers and Electro-Optics Society (LEOS) of the IEEE **13(5)** 3, 1999
- *Linking the 474 THz HeNe/I_2 standard to the 445 THz single Sr^+ trapped ion standard: heterodyne frequency measurements using an OsO_4 stabilized 29 THz laser system*, A.A. Madej, K.J. Siemsen, L. Marmet, J.E. Bernard, O. Acef, IEEE Transactions on Instrumentation and Measurement **48(2)** 553, 1999
- *Cs-based Frequency Measurement of a Single, Trapped Ion Transition in the Visible Region of the Spectrum*, J.E. Bernard, A.A. Madej, L. Marmet, B.G. Whitford, K.J. Siemsen, S. Cundy, Physical Review Letters **82(16)** 3228, 1999
- *Phase-locked optical divide-by-3 system for visible radiation*, J.E. Bernard, B.G. Whitford, L. Marmet, Optics Letters **24(2)** 98, 1999
- *Rb Atomic Absorption Line Reference for Single Sr^+ Laser Cooling Systems*, A.A. Madej, L. Marmet, J.E. Bernard, Applied Physics **B: Lasers and Optics 67(2)** 229, 1998
- *A laser frequency lock referenced to a single trapped ion*, J.E. Bernard, L. Marmet, A.A. Madej, Optics Communications **150(1/6)** 170, 1998

- *Precision frequency measurement of the $^2S_{1/2}$ - $^2D_{5/2}$ transition of Sr^+ with a 674-nm diode laser locked to an ultrastable cavity*, L. Marmet, A.A. Madej, K.J. Siemsen, J.E. Bernard, B.G. Whitford, IEEE Transactions on Instrumentation and Measurement **46(2)** 169, 1997
- *A multiple frequency heterodyne technique for the measurement of long gauges*, K.J. Siemsen, R.F. Siemsen, J.E. Decker, L. Marmet, J.R. Pekelsky, Metrologia **33(6)** 555, 1996
- *Rubidium Rydberg atoms in strong static fields*, G. Raithel, H. Held, L. Marmet, H. Walther, Journal of Physics B: Atomic, Molecular and Optical Physics **27(13)** 2849, 1994
- *Observation of Quasi-Landau Wave Packets*, L. Marmet, H. Held, G. Raithel, J.A. Yeazell, H. Walther, Physical Review Letters **72(24)** 3779, 1994
- *Observation of wave packet motion along quasi-Landau orbits*, J.A. Yeazell, G. Raithel, L. Marmet, H. Held, H. Walther, Physical Review Letters **70(19)** 2884, 1993
- *Second-harmonic generation in atomic hydrogen induced by a charge-separation field*, L. Marmet, K. Hakuta, B.P. Stoicheff, Journal of the Optical Society of America **B 9(7)** 1038, 1992
- *Nonlinear optical generation with reduced absorption using electric-field coupling in atomic hydrogen*, K. Hakuta, L. Marmet, B.P. Stoicheff, Physical Review **A 45(7)** 5152, 1992
- *Second Harmonic Generation in Atomic Hydrogen With and Without an Electric Field*, L. Marmet, Ph. D. Thesis, University of Toronto, **114 pages**, Canada, 1991
- *Second-harmonic generation at Lyman-alpha in atomic hydrogen*, L. Marmet, K. Hakuta, B.P. Stoicheff, Optics Letters **16(4)** 261, 1991
- *Electric-field-induced second-harmonic generation with reduced absorption in atomic hydrogen*, K. Hakuta, L. Marmet, B.P. Stoicheff, Physical Review Letters **66(5)** 596, 1991
- *Binomial smoothing filter: A way to avoid some pitfalls of least square polynomial smoothing*, P. Marchand, L. Marmet, Review of Scientific Instruments **54(8)** 1034, 1983

Conference presentations:

- *Reduction of the Magnetic Sensitivity of an Atomic Clock Against the Non-Uniformity and Variations of the C-Field*, L. Marmet, Proceedings of the IEEE International Frequency Control Symposium and the European Frequency and Time forum, San Francisco, **2011**
- *Evaluation of NRC-FCs1: Mapping the C-field using the Larmor frequency*, L. Marmet, M. Gertsvoft, Proceedings of the Frequency Control Symposium, Newport Beach CA, **2010**
- *Update on the development of NRC-FCs1*, L. Marmet, Proceedings of the IEEE International Frequency Control Symposium Joint with the 22nd European Frequency and Time forum, Besançon France, Apr. **2009**
- *Detailed description of FCs1: NRC's cesium fountain primary standard*, L. Marmet, B. Hoger, P. Dubé, A.A. Madej, J.E. Bernard, Proceedings of the IEEE Int'l Frequency Control Symposium, Honolulu, **2008**
- *Optical Forces as a Redshift Mechanism: The "Spectral Transfer Redshift"*, L. Marmet, 2nd Crisis in Cosmology Conference, CCC-2, **268**, 2008
- *Progress in Building NRC's Cesium Fountain Clock*, L. Marmet, P. Dubé, C. Gigault, Proceedings of the IEEE International Frequency Control Symposium, Vancouver, **2005**
- *Progress towards NRC's fountain clock FCs1*, L. Marmet, E. Guillot, J.-S. Boulanger, Conference on Precision Electromagnetic Measurements digest, Ottawa, **2002**
- *An electrostatic light shutter for atomic fountain clocks*, L. Marmet, R.M. Thomson, Proceedings of the IEEE International Frequency Control Symposium and PDA Exhibition, New Orleans, **2002**
- *The Ultimate Accuracy of Cooled-Cesium Atomic Clocks: Only time will tell*, L. Marmet, Invited talk, CAP Congress, Victoria, B.C., **2001**
- *Precision Absolute Frequency Measurements using a Strontium Single Ion Optical Frequency Standard*, L. Marmet, Invited talk, IEEE/EIA International Frequency Control Symposium, Kansas City, June **2000**
- *Preliminary Results of NRC's Atomic Cesium Fountain*, L. Marmet, M.-C. Gagné, J.-S. Boulanger, R.J. Douglas, E. Guillot, S. Ghezali, IEEE/EIA International Frequency Control Symposium, Kansas City, Missouri, U.S.A., June **2000**
- *Dynamical Behaviour of the Temperature in Cs Optical Molasses*, L. Marmet, M.-C. Gagné, J.-S. Boulanger, Pro-

- *Breaking the Kilohertz Barrier: Optical Spectroscopy at the Hertz Level for Single Trapped Ion*, L. Marmet, A.A. Madej, J.E. Bernard, B.G. Whitford, K.J. Siemsen, Canadian Association of Physicists Congress, Calgary, 1997
- *Precision frequency measurement of the clock transition in a Sr+ single atom with an ultra-stable diode laser*, L. Marmet, A.A. Madej, K.J. Siemsen, J.E. Bernard, [Conference](#) on Precision Electromagnetic Measurements, Braunschweig, Germany, 1996
- *Laser coupling to an ultra-stable Fabry-Perot cavity using optical fiber coupling*, L. Marmet, J.D. Sankey, Congr es de l'Association Canadienne des Physiciens, Qubec City, 1995
- *Wave packet motion in B and E fields observed with a phase sensitive technique*, L. Marmet, H. Held, G. Raithel, J.A. Yeazell, H. Walther, Optical Society of America Annual Meeting, Toronto, 1993
- *Classical orbits of a Rydberg atom in strong electric and magnetic fields*, L. Marmet, J.A. Yeazell, G. Raithel, H. Held, H. Walther, Deutsche Physikalische Gesellschaft Fr uhjahrstagung, Berlin, 1993
- *Second-harmonic generation in atomic hydrogen at Lyman-Alpha*, L. Marmet, K. Hakuta, B.P. Stoicheff, Optical Society of America Annual Meeting, Boston MA, U.S.A., 1990
- *Second-harmonic generation in atomic hydrogen*, L. Marmet, K. Hakuta, Optical Society of America Annual Meeting, Orlando FL, 1989
- *Charge-separation field induced second harmonic in atomic hydrogen*, L. Marmet, Ontario Laser and Lightwave Research Centre, Light propagation in Nonlinear Media (Summer School One), Orangeville, Ontario, 1989
- *Fluorescence Excitation and Lifetime Measurements in Atomic Hydrogen*, L. Marmet, B.P. Stoicheff, Canadian Association of Physicists Congress, Toronto, 1987

Seminars

- *Accurate time measurement: how and why?*, Lecture at Carleton University, Ottawa, Sept. 2011
- *Measuring the 15th significant digit: Evaluation of a Fountain Clock*, INMS Seminar Series, Ottawa, Nov. 2009
- *Frequency & Time Group and NRC activities*, National Physical Laboratories, UK, June 2008
- *Building Better Atomic Clocks*, University of Ottawa Physics Colloquium, Ottawa, Mar. 2006
- *Cooled Cesium Standards and Beyond*, INMS Seminar Series, Ottawa, Oct. 2005
- *Atomic Time with Cooled Cesium Atoms*, Invited talk, York University, Toronto, Mar. 2004
- *The ultimate accuracy of Cooled-Cesium Atomic Clocks: Only time will tell*, Invited talk, University of Ottawa, Ottawa, Oct. 2001

Reports:

- *NRC's recommendations for the questionnaire SG7 ITU-R and advice on the proposed revision of Recommendation ITU-R TF.460-6*, L. Marmet, prepared for the Canadian representative of the International Telecommunications Union, Sept. 2010
- *Smallest integer equal to the sum and the product of the same n positive integers*, L. Marmet, Sequence [A104173](#), On-Line Encyclopedia of Integer Sequences, N.J. Sloane, AT&T Research, Mar. 2005
- *Finite Element Analysis on the Length Change of a ULE Glass Bar for a Stable Reference*, L. Marmet, P. Dub e, G. Li, G. Shi, INMS-NRC Report NRCC46691, 2005
- *Smallest of first run of exactly n consecutive integers which are not square-free; Qgap(10), Qgap(12) to Qgap(18)*, L. Marmet, D. Bernier, Sequence [A051681](#), On-Line Encyclopedia of Integer Sequences, N.J. Sloane, AT&T Research, Dec. 1999
- *Almanach Graphique*, L. Marmet, Le Centre de Qu ebec de la Soci et e Royale d'Astronomie du Canada, ISSN 0384-7691, Published annually 1979-1991

Public Outreach

- *Là est la question*, interview, TFO TV, Montréal, Sept. 14, 2011
- Canada's Official Time, interview, J.D. Brown, CJBQ-AM Belleville, Ontario, Feb. 24, 2011
- *Le maître horloger du Canada*, interview, D. Thibeault, Radio-Canada Télévision, Ottawa, Dec. 31, 2010
- *A global shortage of memory chips in the blink of an eye*, interview, P. Waldie, Globe and Mail, Dec. 10, 2010
- *Le temps atomique canadien et la collaboration avec le Bureau International des Poids et Mesures*, seminar, Société des Amis Canada-France, Ottawa, Apr. 18, 2010
- Tours of NRC-INMS laboratories for students from École Polytechnique, Oct. 22&29, 2009
- *2011: L'odyssée du temps*, documentary, Le Code Chastenay, Télé Québec/Pixom, Feb. 11, 2008
- Clock changes - Daylight saving time, live interview, R. d'Anjou, CHRC-AM (Corus), Québec, Nov. 2, 2007
- *Time is on our side*, interview, A. Ventimiglia, Canadian Geographic, Ottawa, July/Aug. 2007
- Tour of NRC-INMS laboratories for 30 Toronto students, Ottawa, May 28, 2007
- *Universal Time: How can an atomic clock tick so accurately?*, CISTI Seminars, Ottawa, Apr. 25, 2007
- Daylight Saving time, interview, S. Fabiant, Radio-Canada Calgary, Mar. 9, 2007
- Decision to change Daylight Saving Time schedule, interview, K. Djinko, Radio-Canada, Toronto, Mar. 9, 2007
- *Tout le Monde Debout*, live interview about Daylight Saving Time, M.-C. Morin and A. Larivière, radio Rock Détente 94.9-FM, Gatineau, Mar. 9, 2007
- L'heure avancée, live interview, S. Chiasson, Radio-Canada, Moncton, Mar. 7, 2007
- *How Canada has shaped the history of time*, web news interview, Capital News, Ottawa, Jan. 26, 2007
- *Does anyone have the time?* documentary, Daily Planet (Discovery Channel Canada), May 10, 2006
- *La machine à mesurer le temps*, interview, B.A. Vu Van, Québec Science magazine, Mar. 2006
- *Why a clock that loses 1 second every 30 million years won't cut it*, interview, S. Rennie, The Ottawa Citizen, Feb. 17, 2006
- *A l'abris du temps*, documentary, S. Drolet, 78 min., National Film Board, 2000