

Luc CHASSAGNE (1971-01-12)

Professor at University of Versailles Saint-Quentin (France)

LISV Laboratory (Lab of Engineering Systems)

Nationality: french

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Education and employment history

- ✓ **Actual position:** Professor at the **University of Versailles Saint-Quentin (UVSQ) - France**
Teaching in Electronics department
 - Keywords: electronics, sensors, instrumentation, optoelectronics, noise, measurement systems
 - January 2007 to January 2009: **Director of the teaching department** of *Physics, Engineer sciences, Mechanics and Environment Sciences*
Research at the Laboratory of Engineer Systems (**LISV/UVSQ**)
- ✓ **PhD (in 2000) at the of Atomic Clocks Laboratory** (CNRS – Paris XI Orsay – France) in the field of improvement of the accuracy of small optically pumped cesium beam atomic clock.
- ✓ Engineer graduate from Engineer school **Supélec** (in 1994) in speciality of **Instrumentation, Sensors and Measurement Systems**

Main topics in research

- ✓ **Research in nanotechnology:**
Development of sensors and instrumentation for nanosystems (*mainly electronics and optics developments*)
Keywords: Nanometrology – Nanorobotics – Dimensional metrology – Electronics for Instrumentation – Sensors – Optical measurements – Development in atomic force microscopy instrumentation – Watt Balance french project (mass metrology) – Development of interferometers
- ✓ **Research in instrumentation on cars:**
Development of sensors and instrumentation for vehicles (*mainly electronics and optoelectronics developments*)
Keywords: Inter-vehicle distance measurement – Inter-vehicle communications – Sensors for environment measurements for intelligent vehicles
- ✓ **PhD works:**
Keywords: Cesium beam atomic clocks – Industrial atomic clocks – Instrumentation
- ✓ **Miscellaneous:**
 - Reviewer for Sensors and Actuators A, Measurement and Technology, Journal of Optics and Laser technology, JOSA.
 - Coordinator of several projects founded by the ANR (National Research Agency for France).
 - International cooperation with Bulgaria (univ Plovdiv, Pr M. Nenchev), with Taiwan (univ NCU, Pr JuYi Lee and univ NYMU, Pr A. Chiou)

Main publications (2006-2011)

Patents

- [P1] Communications par phares (2009)
Patent n°09 58694, Y. Alayli, S. Topsu, L. Chassagne, J.M. Blosseville
- [P2] Procédé de contrôle de l'amplitude du signal micro-onde appliqué à une horloge atomique et dispositif d'asservissement pour la mise en œuvre de ce procédé,
European patent n°9713572, C. Audoin, F. Hamouda, L. Chassagne, R. Barillet

Journals

- [P23] K. Ouedraogo, S. Topsu, L. Chassagne, P. Ruaux, B. Cagneau, Y. Alayli,
Compact and accurate concept of laser wavemeters based on ellipsometry,
Review of Scientific Instruments, 82, 055112 (2011).
- [P22] L. Perret, L. Chassagne, S. Topcu, P. Ruaux, B. Cagneau, Y. Alayli,
Fiber optics sensor for sub-nanometric displacement and wide bandwidth systems,
Sensors and Actuators A, 165, 189-193 (2011).
- [P21] L. Chassagne, S. Blaize, P. Ruaux, S. Topcu, P. Royer, Y. Alayli, G. Lérondel,
Multi-scale Scanning probe Microscopy,
Review of Scientific Instruments, 81, 086101 (2010).
Selected by on-line journals
Virtual Journal of Biological Physics Research <http://www.vjbio.org>, issue of 1 september
Virtual Journal of Nanoscale Science & Technology <http://www.vjnano.org> issue of 30 August
- [P20] G. Lérondel, A. Sinno, L. Chassagne, S. Blaize, P. Ruaux, A. Bruyant, S. Topçu, P. Royer, Y. Alayli
Enlarged near field optical imaging,
Journal of Applied Physics, 106, 044913 (2009).
- [P19] S. Xu, L. Chassagne, S. Topcu, Y. Alayli, D-S. Li,
Nanopositioning system based on polarimetric interferometer,
Journal of China Institute of Metrology n°20 tome 2, 118-121 (2009).
- [P18] S. Xu, K. Ouedraogo, L. Chassagne, S. Topçu, P. Juncar, Y. Alayli
Polarimetric interferometer for nanoscale positioning applications,
Review of Scientific Instruments, 79, 125104 (2008).
- [P17] J.A. Nasser, S. Topçu, L. Chassagne, A. Bousseksou, T. Guillon, Y. Alayli
3d Electrons-molecular vibrations coupling in spin conversion compounds molecules: A quantitative study for the [Fe(phen)₂(NCS)₂] molecules,
Chemical Physics Letters, 446 (2007) 385-390.
- [P16] A. Sinno, P. Ruaux, L. Chassagne, S. Topçu, Y. Alayli, G. Lérondel, S. Blaize, A. Bruyant, P. Royer
2D Enlarged atomic force microscopy scanning scope: novel sample-holder device with millimetre range,
Review of Scientific Instruments, 78, 095107 (2007).
- [P15] L. Chassagne, M. Wakim, S. Xu, S. Topçu, P. Ruaux, P. Juncar, Y. Alayli
2D nano-positioning system with a sub-nanometric repeatability over millimetre displacement range,
Measurement Science and Technology 18 (2007) 3267-3272.
- [P14] G. Genevès *et al.*
The watt balance: toward a new definition of the mass unit ?
Revue française de Métrologie n°96, 2007-1.
- [P13] D. Haddad, M. Wakim, L. Chassagne, S. Topçu, P. Juncar, Y. Alayli,
Position and velocity control at the nanometric scale in the LNE watt balance project,
Revue française de Métrologie n°6, 2006-2.

- [P12] M. Wakim, S. Topçu, L. Chassagne, J. Nasser, Y. Alayli, P. Juncar,
Highly accurate laser wavelength meter based on Doppler effect,
Optics Communications, 262 (2006) 97-102.
- [P11] L. Chassagne, S. Topçu, Y. Alayli, P. Juncar,
Highly accurate positioning control method for piezoelectric actuators based on phase-shifting optoelectronics,
Measurement Science and Technology 16 (2005) 1771-1777.
- [P10] Y. Alayli, S. Topçu, L. Chassagne, J. Viennet,
Compensation of the thermal influence on a high accuracy optical fibre displacement sensor,
Sensors and Actuators A : Physical, Vol 120, Issue 2, pp343-348, May 2005.
- [P9] S. Topçu, L. Chassagne, Y. Alayli, P. Juncar,
Improving the accuracy of homodyne Michelson interferometers using polarisation state measurement techniques,
Optics Communications, Vol 247 pp:133-139, March 2005.
- [P8] G. Genevès, P. Gournay, A. Gosset, M. Lecollinet, F. Villar, P. Pinot, P. Juncar, A. Clairon, A. Landragin, D. Holleville, F. Pereira Dos Santos, J. David, M. Besbes, F. Alves, L. Chassagne, S. Topçu
The watt balance project,
IEEE Transactions on Instrumentation and Measurements, Special Issue on CPEM 2004, Vol 54 N°2, (ISSN0018-9456) pp 850-853, April 2005.
- [P7] S. Topçu, L. Chassagne, D. Haddad, Y. Alayli, Patrick Juncar,
High accuracy velocity control method for the French moving coil watt balance,
Review of Scientific Instruments, Vol 75, N°11, pp 4824-4827, November 2004.
- [P6] Y. Alayli, S. Topçu, D. Wang, R. Dib, L. Chassagne,
Applications of a high accuracy fiber optic displacement sensor to vibrometry and profilometry,
Sensors and Actuators A : Physical, Vol A116 (2004), 85-90.
- [P5] S. Topçu, L. Chassagne, D. Haddad, Y. Alayli, P. Juncar,
Heterodyne interferometric technique for displacement control at the nanometric scale,
Review of Scientific Instruments, Vol 74, N°11, pp 4876-4880, November 2003.
Selected by on-line journals
Virtual Nanoscale Science & Technology <http://www.vjnano.org> issue, Vol 8, Issue 19, 2003
- [P4] S. Topçu, L. Chassagne, Y. Alayli
A new type of fiber-optic-based interferometric ellipsometer for in-situ and real-time measurement,
Review of Scientific Instruments, Vol 74, N°10, pp 4442-4447, October 2003.
- [P3] L. Chassagne, F. Hamouda, G. Théobald, P. Cerez,
Implementation of beam reversal technique on small cesium clocks : towards an improvement in accuracy,
IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol 48, N°6, pp 1513-1516, November 2001.
- [P2] F. Hamouda, C. Audoin, L. Chassagne, R. Barillet,
Transient Response Following Frequency or Amplitude Switching in a Cesium Beam Tube,
IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol 46, N°4, pp 861-866, July 1999.
- [P1] C. Audoin, F. Hamouda, L. Chassagne, R. Barillet
Controlling the Microwave Amplitude in Optically Pumped Cesium Beam Frequency Standards,
IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol 46, N°2, pp 407-413, March 1999.

Conferences

- [C42] L. Chassagne, P. Ruaux, S. Topsu, B. Cagneau, Y. Alayli, G. Lerondel, M. Besnard, P. Sauvageot, *Porte-échantillon multi-échelle pour un positionnement nanométrique en microscopie en champ proche et en lithographie*,
Oral communication at 11ème colloque international francophone Méthodes et Techniques Optiques pour l'Industrie, (Toulouse - France), November 2010.
- [C41] A. Sinno, P. Ruaux, L. Chassagne, S. Topcu, Y. Alayli, G. Lerondel, S. Blaize, A. Bruyant, P. Royer, *Enlarged Sample Holder for Optical AFM Imaging: Millimeter Scanning with High Resolution*,
Oral communications at SensorsDevices 2010 (Venice – Italy), July 2010.
- [C40] S. Topsu, L. Chassagne, A. Sinno, P. Ruaux, Y. Alayli, G. Lerondel, S. Blaize, A. Bruyant, P. Royer, *Millimeter scale topographical image of highly integrated optical structures using enlarged metrological atomic force microscopy*,
Oral communication at SPIE Photonics Europe 2010 Conference (Bruxelles – Belgium), April 2010.
- [C39] A. Sinno, L. Chassagne, P. Ruaux, S. Topcu, Y. Alayli, G. Lerondel, S. Blaize, A. Bruyant, P. Royer *Microscopie en champ proche multi-échelle : du nanomètre au millimètre*, Proc. 5ème Colloque Interdisciplinaire en Instrumentation C2I (Le Mans-France) vol. x, pp xx, January 2010.
- [C38] S. Xu, L. Chassagne, S. Topçu, Y. Alayli, P. Juncar *Polarimetric Michelson interferometer for sub-nanometric scale positioning control*,
Poster IEEE Eurocon 2009 Conference (Saint-Petersburg – Russia), CD ISBN 978 1-4244-3861-7/09, pp 2029-2033, May 2009.
- [C37] A. Sinno, P. Ruaux, L. Chassagne, S. Topçu, Y. Alayli, G. Lerondel, S. Blaize, A. Bruyant, P. Royer *Enlarge sample-holder for optical AFM imaging: millimetre scanning with high resolution*,
Oral communication at IEEE Eurocon 2009 Conference (Saint-Petersburg – Russia), CD ISBN 978 1-4244-3861-7/09, pp 2070-2074, May 2009.
- [C36] S. Xu, K. Ouedraogo, L. Chassagne, S. Topsu, Y. Alayli *Sub-nanometric scale position control sensor for nanometrological applications*,
Oral communication at RMO 2008, 20th International Metrology Symposium, (Cavtat-Dubrovnik – Croatia), November 2008.
- [C35] J.P. Loisel, S. Topçu, L. Chassagne, Y. Alayli, P.R. Dahoo, T. Badr, P. Juncar *Efficient diode-pumped intracavity frequency-doubled CWNd: YLF laser emitting at 656 nm for a silver atom optical clock*,
Oral communication at SPIE Photonics Europe, (Strasbourg – USA), April 2008.
- [C34] J.P. Loisel, S. Topçu, L. Chassagne, Y. Alayli, P.R. Dahoo, T. Badr, P. Juncar *Efficient diode-pumped intracavity frequency-doubled CWNd: YLF laser emitting at 656 nm for a silver atom optical clock*,
Poster at SPIE Photonics West, (San Jose – California - USA), January 2008.
- [C33] M. Wakim, L. Chassagne, P. Juncar, S. Topçu, G. Genevès, Y. Alayli, *Mesure et contrôle de position et de vitesse à l'échelle nanométrique : Application à la balance du watt*,
Oral communication at 8^o Colloque de Contrôle et mesures Optiques pour l'Industrie, pp 3-5 (Arcachon – France), Proc. 2007 pp 3-5, November 2007.
- [C32] A. Sinno, P. Ruaux, L. Chassagne, S. Topçu, Y. Alayli, G. Lerondel, P. Royer, A. Bruyant, S. Blaise *Large Area Coverage Sample Holder Unit For Enhanced Near Field Microscopy Applications*, SFP.
- [C31] A. Sinno, P. Ruaux, L. Chassagne, S. Topçu, Y. Alayli, G. Lerondel, P. Royer, A. Bruyant, S. Blaise *Large Area Coverage Sample Holder Unit For Enhanced Near Field Microscopy Applications*, ISOT 07 – EPFL (Lausanne - Switzerland), Proc. SPIE vol. 6716, pp 67160E-67169E, 8-10 October 2007.
- [C30] K. Ouedraogo, S. Topçu, L. Chassagne, Y. Alayli *An improved miniature wavelength meter based on polarisation state measurements*,
SPIE, International Congress on Optics and Optoelectronics (Prague – Czech Republic), Vol 6585, ISBN n° 978-0-8194-6729-4, April 2007.

- [C29] K. Ouedraogo, S. Topçu, L. Chassagne, P. Juncar, Y. Alayli
Absolute method for an optical measurement of the earth gravitational axis,
SPIE, International Congress on Optics and Optoelectronics (Prague – Czech Republic), Vol 6585, ISBN n° 978-0-8194-6729-4, April 2007.
- [C28] M. Wakim, L. Chassagne, S. Topçu, Y. Alayli, P. Juncar, J.P. Wallerand, G. Genevès
Novel concept of interferometric control of the moving coil in the watt balance,
SPIE, International Congress on Optics and Optoelectronics (Prague – Czech Republic), Vol 6585, ISBN n° 978-0-8194-6729-4, April 2007.
- [C27] A. Sinno, L. Chassagne, P. Ruaux, S. Topçu, Y. Alayli, G. Lerondel, P. Royer, S. Blaize, I. Stefanon
Platine porte-échantillon à course millimétrique pour la microscopie en champ proche,
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- [C26] M. Wakim, L. Chassagne, S. Topçu, Y. Alayli,
Système de déplacement deux axes dédié aux applications de nano-déplacements,
Oral communication at 7° Colloque de Contrôle et mesures Optiques pour l'Industrie, (Mulhouse – France), Proc. 2007 pp 140-142, November 2006.
- [C25] K. Ouedraogo, S. Topçu, L. Chassagne, Y. Alayli,
Lambdamètre polarimétrique,
Oral communication at 7° Colloque de Contrôle et mesures Optiques pour l'Industrie, (Mulhouse – France), Proc. 2007 pp 167-169, November 2006.
- [C24] K. Ouedraogo, S. Topçu, L. Chassagne, Y. Alayli, J. Nasser, P. Juncar,
An improved homodyne Michelson interferometer based on ellipsometry,
Proc. of IV International Symposium on Laser Technologies and Lasers, pp 84-89, Plovdiv, Bulgaria, October 2005.
- [C23] L. Chassagne, S. Topçu, Y. Alayli, P. Juncar, G. Lerondel, S. Blaize, A. Bruyant, I. Stefanon, P. Royer,
Near field characterization of millimeter long wave guiding structures using a high accuracy optoelectronic control system holding the sample,
Oral communication at SPIE's International Symposium Optical Metrology 2005 (Munich - Germany), vol 5858, 13-17 June 2005.
- [C22] L. Chassagne, S. Topçu, Y. Alayli, P. Juncar, G. Lerondel, S. Blaize, A. Bruyant, I. Stefanon, P. Royer,
Development of a long range nanometric precision stage for near field characterization,
Poster at 5th International Conference European Society for Precision Engineering and Nanotechnology (EUSPEN) (Montpellier - France), May 2005.
- [C21] S. Topçu, L. Chassagne, D. Haddad, Y. Alayli, P. Juncar,
High accuracy velocity control method for the French moving-coil watt balance,
Poster at Conference on Precision Electromagnetic Measurements CPEM2004 (London – UK), June 2004.
- [C20] G. Genevès, P. Gournay, M. Lecollinet, F. Villar, M. Besbes, F. Alvez, A. Clairon, A. Landragin, D. Holleville, J. David, L. Chassagne, A. Gosset, P. Juncar, F. Pereira Dos Santos, P. Pinot, S. Topçu,
The BNM watt balance project,
Oral conference at Conference on Precision Electromagnetic Measurements CPEM2004, (London, UK), 27 June – 2 July 2004.
- [C19] L. Chassagne, S. Topçu, D. Haddad, Y. Alayli, P. Juncar,
Control of a moving system at sub-nanometric scale for microfabrication,
Poster at International Symposium of Design, Test, Integration and Packaging of MEMS/MOEMS (Montreux – Switzerland), Proceedings ISBN n° 2-84813-026-1, pp223-226, May 2004.
- [C18] L. Chassagne, S. Topçu, D. Haddad, Y. Alayli, P. Juncar,
Nano-displacement control with optical heterodyne interferometry,
Oral communication at SPIE's International Photonics Europe 2004 (Strasbourg- France), Proc Vol 5457 pp574-580, ISBN 0-8194-5379-X, April 2004.
- [C17] S. Topçu, L. Chassagne, D. Haddad, Y. Alayli, P. Juncar,
Mesure et contrôle de position et de vitesse à l'échelle nanométrique. Application à la balance du watt,
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- [C16] Y. Alayli, S. Topçu, L. Chassagne, D. Wang, P. Juncar,
Caractérisation in-situ des surfaces usinées par profilométrie à fibre optique,
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- [C15] S. Topçu, D. Haddad, L. Chassagne, Y. Alayli, P. Juncar,
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International Conference on Laser Applications and Optical Metrology, (Delhi - India), Proceeding ISBN 81-88342-25-4, Anamaya Publishers, 2003.
- [C14] D. Haddad, L. Chassagne, S. Topçu, Y. Alayli, P. Juncar,
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- [C13] F. Alves, M. Besbes, A. Clairon, L. Chassagne, J. David, A. Gosset, P. Gournay, D. Holleville, P. Juncar, A. Landragin, M. Lecollinet, F. Pereira Dos Santos, P. Pinot, S. Topçu, F. Villar, G. Genevès,
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Technique interférométrique hétérodyne de mesure de position à l'échelle nanométrique d'un système mécanique en translation sur une grande étendue : application à la balance du watt,
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- [C11] D. Haddad, S. Topçu, L. Chassagne, Y. Alayli, P. Juncar,
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- [C10] D. Haddad, L. Chassagne, S. Topçu, Y. Alayli, P. Juncar,
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- [C7] S. Guérandel, V. Hermann, R. Barillet, P. Cérez, G. Théobald, L. Chassagne, C. Sallot, J. Delporte,
Compact cesium beam clocks : improvements towards $10^{-12} \tau^{1/2}$,
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- [C6] V. Hermann, L. Chassagne, T. Zanon, C. Audoin, P. Cérez, G. Théobald,
Current status of the miniature optically pumped cesium beam frequency standards at LHA,
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- [C5] L. Chassagne, F. Hamouda, G. Théobald, P. Cérez,
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- [C4] V. Hermann, F. Hamouda, G. Théobald, L. Chassagne, C. Audoin, P. Cérez, F. Mescherberger, F. Boust, F. Deyzac,

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Comparison of Methods Aimed at Determining the Residual Cavity Phase Shift in Short Cs Beam Clocks,
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