

CURRICULUM VITAE  
CÉLINE CASENAVE

**Ph. D and Engineer in Automatic Control**  
**Master of science in Applied Mathematics**

*Fields of research:*

- **microbial ecosystems:** modelling, analysis, simulation and control of systems with microorganisms (yeast, bacteria, plankton...). Population models (chemostat, logistic, competition, predator-prey, etc...).
- **control of bioprocesses:** control of bioreactors for example for the food industry (wine fermentation), or the wastewater treatment.
- **distributed delay systems** (i.e. integro-differential equations): modelling, simulation, identification and control.

*Date of birth:* 12/06/1982  
Single

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## Work experience

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- Sept 2011- : **INRA Junior researcher (French National Institute for Agricultural Research)**, Montpellier, France.  
Department of Applied Mathematics and Informatics  
Unit MISTEA: Mathematical, Informatics and STatistics for Environment and Agronomy ([http://www6.montpellier.inra.fr/mistea\\_eng/](http://www6.montpellier.inra.fr/mistea_eng/))
- 03/2014-  
08/2015: **Visiting researcher at NIGLAS** (Nanjing Institute of Geography and Limnology, Chinese Academy of Science), Nanjing, China.  
Fellowship for Young International Scientists of the Chinese Academy of Sciences  
Fellowship of the European program Agreenskills
- 2011-2014 : **Member of the MODEMIC INRA/INRIA project-team:** Modelling and optimisation of the dynamics of ecosystems with micro-organisms ( <https://team.inria.fr/modemic> )
- 2010-2011 : **Post-doctoral position at CESAME (Centre for systems engineering and applied mechanics)**, Université catholique de Louvain (UCL), Louvain-la-neuve, Belgium.  
*Supervisor:* Mr D. Dochain
- 2009-2010 : **Temporary teaching assistant in Applied Mathematics**, ENSEEIHT (French engineering school in Electrical Engineering, Electronics, Computer Science, Hydraulics and Telecommunications), Toulouse, France.
- 2006-2009 : **Temporary teaching assistant in Computer Science, Control and Signal Processing**, University Paul Sabatier, Toulouse, France.

## Education

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- 2006-2009 : **Ph.D in Automatic Control**  
*Title: Diffusive representation and operatorial inversion for the analysis and the resolution of non local dynamic problems*  
*Laboratory:* Laboratory for Analysis and Architecture of Systems (LAAS - CNRS), Toulouse, France. *Thesis supervisor:* G. Montseny
- 2005-2006 : **Predoctoral research in Automatic Control** with first class honours, top of the year, SUPAERO (National Higher School of Aeronautics and Space), Toulouse, France.
- 2004-2006 : **Engineering Degree of SUPAERO (National Higher School of Aeronautics and Space)**, Toulouse, France.
- 2003-2004 : **Master of Science in Applied Mathematics** with first class honours, top of the year, Université Paul Sabatier, Toulouse, France.
- 2002-2003 : **Bachelor of Science in Applied Mathematics** with first class honours, top of the year, Université Paul Sabatier, Toulouse, France.

## Skills

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- Languages     **french:** fluent (mother tongue)  
                  **english:** working knowledge of English  
                  **german:** basics
- Computer     Latex, Matlab, Maple, C/C++, HTML, php, javascript, mysql

## Academic Award

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- 2014 :           Application Paper Prize (APP) of the 19th World Congress of IFAC (International Federation of Automatic Control), for the paper "Control of a Multi-Stage Continuous Fermentor for the study of the wine fermentation"
- 2014 :           Fellowship for Young International Scientists of the Chinese Academy of Sciences (CAS)
- 2013 :           Fellowship of the European programm Agreenskills
- 2013 :           Outstanding Reviewer, IEEE Transactions on Automatic Control
- 2009 :           Fellow of the Amelia Earhart award of Zonta International (<http://www.zonta.org>), honoring women pursuing P.h.D./doctoral degrees in aerospace-related engineering.

## Publications

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All the already published papers can be downloaded in <http://celinecasenave.fr>

### International journal papers

#### • *Published (11)*

- [1] **Effects of wind wave turbulence on the phytoplankton community composition in large, shallow lake taihu.** JIAN ZHOU, BOQIANG QIN, CÉLINE CASENAVE, XIAOXIA HAN, GUIJUN YANG, TINGFENG WU, PAN WU, AND JIANRONG MA. *Environmental Science and Pollution Research*, 2015.
- [2] **Multi-Rate Mass Transfer (MRMT) models for general diffusive porosity structures.** TRISTAN BABEY, JEAN-RAYNALD DE DREUZY, AND CÉLINE CASENAVE. *Advances in Water Resources*, 76:146–156–287, 2015.
- [3] **Model identification and reduction for the control of an ice cream crystallization process.** C. CASENAVE, D. DOCHAIN, G. ALVAREZ, M. ARELLANO, H. BENKHELIFA, AND D. LEDUCQ. *Chemical Engineering Science*, 119:274–287, 2014.

- [4] **Analysis, simulation and impedance operator of a nonlocal model of porous medium for aeroacoustics control.** C. CASENAVE AND E. MONTSÉNY. *Journal of Vibration and Control*, online publication, 2013.
- [5] **Time-local formulation and identification of implicit Volterra models by means of diffusive representation.** C. CASENAVE. *Automatica*, 47(10):2273–2278, 2011.
- [6] **Identification and state realization of non-rational convolutive models by means of diffusive representation.** C. CASENAVE AND G. MONTSÉNY. *IET Control Theory & Applications*, 5(7):934–942, 2011.
- [7] **Identification of dynamic nonlinear thermal transfers for precise correction of bias induced by temperature variations.** C. CASENAVE, G. MONTSÉNY, H. CAMON, AND F. BLARD. *Microsystem technologies*, 17(4):645–654, 2011.
- [8] **Identification of nonlinear dynamic models of electrostatically actuated MEMS.** C. CASENAVE, E. MONTSÉNY, AND H. CAMON. *Control Engineering Practice (CEP)*, 18(8):954–969, 2010.
- [9] **Optimal identification of delay-diffusive operators and application to the impedance operator of absorbent materials.** C. CASENAVE AND G. MONTSÉNY. *"Time-Delay Systems: Analysis, Algorithms and Control"*, *Lecture Notes in Control and Information Sciences*, 388:315–325, 2009.
- [10] **Time-local dissipative formulation and stable numerical schemes for a class of integrodifferential wave equations.** C. CASENAVE AND E. MONTSÉNY. *SIAM Journal on Applied Mathematics*, 341:1763–1783, 2008.
- [11] **Dissipative differential formulation of an aeroacoustic absorbing porous wall model.** C. CASENAVE, E. MONTSÉNY, AND L. SÉGUI. *Comptes rendus de l'Académie des Sciences (CRAS) - Mécanique*, 336(4):398–403, 2008.

• *Submitted (2)*

- [12] **Least-Squares identification by operatorial cancellation of nonlinear terms - Application to a class of Volterra Models.** C. CASENAVE, E. MONTSÉNY, AND G. MONTSÉNY. *Submitted to Automatica*, 16 pages.
- [13] **Controllability of SISO Volterra models via diffusive representation.** C. CASENAVE, G. MONTSÉNY, AND C. PRIEUR. *Submitted to ESAIM: COCV*, 7 pages.

• *In preparation (2)*

- [14] **Control of a nonlinear ice cream crystallization process.** C. CASENAVE, D. DOCHAIN, G. ALVAREZ, M. ARELLANO, H. BENKHELIFA, AND D. LEDUCQ. *In preparation*.
- [15] **Control of a Multi-Stage Continuous Fermentor (MSCF) for the study of the wine fermentation.** C. CASENAVE, D. DOCHAIN, J. HARMAND, A. RAPAPORT, AND M. PEREZ. *In preparation*.

*International conferences (15)*

- [16] **Control of a class of nonlinear cascade systems with input-dependent saturations.** C. CASENAVE AND M. PÉREZ. *27th Chinese Control and Decision Conference (CCDC), QingDao (China)*, May 23-25 2015.
- [17] **Control of a Multi-Stage Continuous Fermentor for the study of the wine fermentation.** C. CASENAVE, D. DOCHAIN, J. HARMAND, M. PÉREZ, A. RAPAPORT, AND J-M. SABLAYROLLES. *19th IFAC World Congress 2014, Cape Town (South Africa) - Application Paper Prize -*, August 24-29 2014.

- [18] **Impact of immobile porosity architecture on reactive transport in mobile/immobile models.** T. BABEY, J-R. DE DREUZY, A. RAPAPORT, AND C. CASENAVE. *AGU (American Geophysical Union) Fall Meeting 2013, San Francisco (USA)*, December 9-13 2013.
- [19] **Control of a nonlinear ice cream crystallization process.** C. CASENAVE, D. DOCHAIN, G. ALVAREZ, M. ARELLANO, H. BENKHELIFA, AND D. LEDUCQ. *9th IFAC Symposium on Nonlinear Control Systems (NOLCOS) 2013, Toulouse (France)*, September 4-6 2013.
- [20] **Steady-state and stability analysis of a population balance based nonlinear ice cream crystallization model.** C. CASENAVE, D. DOCHAIN, G. ALVAREZ, H. BENKHELIFA, D. FLICK, AND D. LEDUCQ. *American Control Conference (ACC) 2012, Montreal (Canada)*, June 27-29 2012.
- [21] **Controllability of SISO Volterra models via diffusive representation.** C. CASENAVE AND C. PRIEUR. *IFAC World Congress 2011, Milan (Italy)*, August 28 - September 2 2011.
- [22] **Identification of time-non local models under diffusive representation.** C. CASENAVE. In *4th IFAC Symposium on System, Structure and Control, SSSC 2010, Ancona (Italy)*, September 15-17 2010.
- [23] **Introduction to diffusive representation.** C. CASENAVE AND G. MONTSENY. In *4th IFAC Symposium on System, Structure and Control, SSSC 2010, Ancona (Italy)*, September 15-17 2010.
- [24] **Identification of dynamic nonlinear thermal transfers for precise correction of bias induced by temperature variations.** C. CASENAVE, G. MONTSENY, H. CAMON, AND F. BLARD. In *Symposium on Design, Test, Integration & Packaging of MEMS/MOEMS, DTIP 2010, Seville (Spain)*, May 5-7 2010.
- [25] **A cancellation operator suitable for identification of nonlinear Volterra models.** C. CASENAVE AND G. MONTSENY. In *IFAC Workshop on Control of Distributed Parameter Systems (CDPS 2009), 2 pages, Toulouse (France)*, July 20-24 2009.
- [26] **Identification of electrostatically actuated MEMS models from real measurement data.** C. CASENAVE, E. MONTSENY, AND H. CAMON. In *15th IFAC Symposium on System Identification, SYSID 2009*, pages 1738–1743, Saint-Malo (France), July 6-8 2009.
- [27] **Diffusive identification of Volterra models by cancellation of the nonlinear term.** C. CASENAVE AND G. MONTSENY. In *15th IFAC Symposium on System Identification, SYSID 2009*, pages 640–645, Saint-Malo (France), July 6-8 2009.
- [28] **Dissipative state formulations and numerical simulation of a porous medium for boundary absorbing control of aeroacoustic waves.** C. CASENAVE AND E. MONTSENY. In *17th IFAC World Congress*, pages 13432–13437, Seoul (Korea), July 6-11 2008.
- [29] **Identification of nonlinear Volterra models by means of diffusive representation.** C. CASENAVE AND G. MONTSENY. In *17th IFAC World Congress*, pages 4024–4029, Seoul (Korea), July 6-11 2008.
- [30] **Optimal identification of delay-diffusive operators and application to the acoustic impedance of absorbent materials.** C. CASENAVE AND G. MONTSENY. In *7th Workshop on Time-Delay Systems (TDS 2007), 6 pages, Nantes (France)*, September 17-19 2007 (invité).