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# Curriculum Vitae

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Guillaume OLIVE

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Webpage: <https://math-golive.com>  
Place of birth: Marseille (FRANCE)  
Nationality: French Citizen  
Age: 36 y.o.

## Research interests

- Partial differential equations, Integral equations
- Control theory and stabilization
- Spectral theory
- Pluripotential theory

## Current position

09/2021 – present **Adiunkt (Assistant professor)**  
Jagiellonian University (Poland)

## Experience

11/2018 – 09/2021 **Post-doctoral researcher**  
under the supervision of Slawomir Dinew  
Jagiellonian University (Poland)

- 04/2016 – 10/2016 **Post-doctoral researcher**  
under the supervision of Marius Tucsnak  
University of Bordeaux (France)
- 09/2015 – 03/2016 **Post-doctoral researcher**  
under the supervision of Miroslav Krstic  
University of California, San Diego (U.S.A.)
- 09/2014 – 08/2015 **Post-doctoral researcher**  
under the supervision of Jean-Michel Coron  
University Pierre and Marie Curie, Paris (France)
- 09/2013 – 08/2014 **Temporary teaching and research assistant**  
University of Aix-Marseille (France)

## Education

- 09/2010 – 08/2013 **Ph.D. thesis in Applied Mathematics**  
under the supervision of Assia Benabdallah and Franck Boyer  
University of Aix-Marseille (France)
- 09/2008 – 08/2010 **Research Master in "PDE and Scientific Computing"**  
University of Aix-Marseille (France)
- 09/2005 – 08/2008 **Degree in Mathematics**  
University of Aix-Marseille (France)

## Publications

### Articles published in a peer-reviewed journal

- [15] F. BOYER AND G. OLIVE, *Boundary null controllability of some multi-dimensional linear parabolic systems by the moment method*, to appear in Annales de l'Institut Fourier. Preprint
- [14] L. HU AND G. OLIVE, *Equivalent one-dimensional first-order linear hyperbolic systems and range of the minimal null control time with respect to the internal coupling matrix*, J. Differential Equations 336 (2022), 654–707. Published version. Preprint

- [13] S. ABJA, S. DINEW AND G. OLIVE, *Uniform estimates for concave homogeneous complex degenerate elliptic equations comparable to the Monge-Ampère equation*, *Potential Anal* (2022). Published version. Preprint
- [12] S. ABJA AND G. OLIVE, *Local regularity for concave homogeneous complex degenerate elliptic equations dominating the Monge-Ampère equation*, *Ann. Mat. Pura Appl.* (4) 201 (2022), no. 2, 561–587. Published version. Preprint
- [11] L. HU AND G. OLIVE, *Null controllability and finite-time stabilization in minimal time of one-dimensional first-order  $2 \times 2$  linear hyperbolic systems*, *ESAIM Control Optim. Calc. Var.* 27 (2021), Paper No. 96, 18 pp. Published version. Preprint
- [10] L. HU AND G. OLIVE, *Minimal time for the exact controllability of one-dimensional first-order linear hyperbolic systems by one-sided boundary controls*, *J. Math. Pures Appl.* (9) 148 (2021), 24–74. Published version. Preprint
- [9] J.-M. CORON, L. HU, G. OLIVE AND P. SHANG, *Boundary stabilization in finite time of one-dimensional linear hyperbolic balance laws with coefficients depending on time and space*, *J. Differential Equations* 271 (2021) 1109-1170. Published version. Preprint
- [8] M. DUPREZ AND G. OLIVE, *Compact perturbations of controlled systems*, *Math. Control Relat. Fields* 8 (2018), pp. 397-410. Published version. Preprint
- [7] J.-M. CORON, L. HU AND G. OLIVE, *Finite-time boundary stabilization of general linear hyperbolic balance laws via Fredholm backstepping transformation*, *Automatica* 84 (2017), pp. 95-100. Published version. Preprint
- [6] F. ALABAU-BOUSSOUIRA, J.-M. CORON AND G. OLIVE, *Internal controllability of first order quasilinear hyperbolic systems with a reduced number of controls*, *SIAM J. Control Optim.* 55-1 (2017), pp. 300-323. Published version. Preprint
- [5] J.-M. CORON, L. HU AND G. OLIVE, *Stabilization and controllability of first-order integro-differential hyperbolic equations*, *J. Funct. Anal.* 271 (2016), 3554–3587. Published version. Preprint
- [4] A. BENABDALLAH, F. BOYER, M. GONZÁLEZ-BURGOS AND G. OLIVE, *Sharp estimates of the one-dimensional boundary control cost for parabolic systems and application to the  $N$ -dimensional boundary null-controllability in cylindrical domains*, *SIAM J. Control Optim.* 52 (2014), no. 5, 2970–3001. Published version. Preprint
- [3] F. BOYER AND G. OLIVE, *Approximate controllability conditions for some linear 1D parabolic systems with space-dependent coefficients*, *Math. Control Relat. Fields* 4 (2014), no. 3, 263–287. Published version. Preprint
- [2] G. OLIVE, *Boundary approximate controllability of some linear parabolic systems*, *Evol. Equ. Control Theory* 3 (2014), no. 1, 167–189. Published version. Preprint

- [1] G. OLIVE, *Null-controllability for some linear parabolic systems with controls acting on different parts of the domain and its boundary*, Math. Control Signals Systems 23 (2012), no. 4, 257–280. Published version.

### Ph.D. Thesis

G. OLIVE, *Controllability of coupled linear parabolic systems (2013)*. Manuscript.

Thesis defended on November 14th, 2013 in front of the following committee:

- FATIHA ALABAU-BOUSSOUIRA (Professor at the University of Lorraine): **referee**
- FARID AMMAR-KHODJA (Assistant professor at the University of Franche-Comté)
- KARINE BEAUCHARD (Researcher at the École Polytechnique): **president**
- ASSIA BENABDALLAH (Professor at the University of Aix-Marseille): **thesis advisor**
- FRANCK BOYER (Professor at the University of Aix-Marseille): **thesis advisor**
- MICHEL CRISTOFOL (Assistant professor at the University of Aix-Marseille)
- TAKÉO TAKAHASHI (Researcher at INRIA)
- EMMANUEL TRÉLAT (Professor at the University of Pierre and Marie Curie (Paris 6)): **referee**

### Financing

2021.08.05 – 2024.08.04 **SONATA 16**

Controllability of systems of PDEs

National Science Centre, Poland UMO-2020/39/D/ST1/01136

[https://projekty.ncn.gov.pl/index.php?projekt\\_id=499986](https://projekty.ncn.gov.pl/index.php?projekt_id=499986)

## Scientific activities

### Research stays

- Nov. 2019 **1 week – at the Toulouse Mathematics Institute (France)**,  
invitation of Franck Boyer.
- Mar. 2019 **1 week – at the Toulouse Mathematics Institute (France)**,  
invitation of Franck Boyer.
- Jul. 2018 **3 weeks – at the Tongji University (China)**,  
invitation of Peipei Shang.
- Sep. 2017 **2 weeks – at the ETH Institute for Theoretical Studies (Switzerland)**,  
invitation of Jean-Michel Coron.
- Mar. 2017 **1 month – at the Shandong University (China)**,  
invitation of Long Hu.
- Aug. 2013 **1 week – at the National Autonomous University of Mexico (Mexico)**,  
invitation of Luz de Teresa.
- Feb. 2013 **2 weeks – at the University of Seville (Spain)**,  
invitation of Manuel González-Burgos.
- Dec. 2011 **1 week – at the University of Tokyo (Japan)**,  
invitation of Masahiro Yamamoto.

### Administrative seminar

- Mar. 2017 **9th Seminar on the Training Program of Top-level Students in Fundamental Sciences**, Jinan (China).  
<http://www.en.sdu.edu.cn/info/1018/1369.htm>

### Conferences

- May 2022 “*Systèmes hyperboliques linéaires équivalents et contrôlabilité à zéro*”.  
**Workshop ANR TRECOS 2022**, Marseille (France).  
<https://indico.math.cnrs.fr/event/7988/contributions/6639/>
- Nov. 2019 “*Minimal control time for one-dimensional first-order hyperbolic systems*”.  
**Inverse Problems and Related Fields '19**, Marseille (France).  
<https://iprf19.sciencesconf.org/>

- Sep. 2019 “*Minimal control time for one-dimensional first-order hyperbolic systems*”.  
**Dynamics, Equations and Applications 2019**, Krakow (Poland).  
<https://www.dea.agh.edu.pl/sessions-e>
- May 2019 “*Minimal control time for one-dimensional first-order hyperbolic systems*”.  
**International Conference on Elliptic and Parabolic Problems**, Gaeta (Italy).  
<https://www.math.uzh.ch/en/konferenzdetails0?key1=545>
- Nov. 2018 “*Observability inequalities with compact remainder*”.  
**Analysis, Control and Inverse Problems for PDEs**, Napoli (Italy).  
<http://www.dma.unina.it/floridia/ControlPDEs2018/abstract.html>
- Dec. 2016 “*The Fattorini criterion*”.  
**Workshop on Parabolic Control with Hyperbolic Effects**, Toulouse (France).
- Jun. 2016 “*Stabilization and controllability of first-order integro-differential hyperbolic equations*”.  
**Nonlinear Partial Differential Equations and Applications - A conference in the honor of Jean-Michel Coron for his 60th birthday**, Paris (France).  
<https://www.ljll.math.upmc.fr/coron60/schedule.html>
- Nov. 2015 “*Stabilization and controllability of integro-differential hyperbolic equations*”.  
**29th Southern California Control Workshop**, Los Angeles (U.S.A.).
- Jun. 2015 “*Controllability of parabolic systems*”.  
**From Open to Closed Loop Control**, Graz (Austria).  
<https://imsc.uni-graz.at/mobis/mariatrost15/schedule.html>
- Jun. 2015 “*Contrôlabilité interne de systèmes hyperboliques quasi-linéaires avec un nombre réduit de contrôles*”.  
**Congrès SMAI 2015**, Les Karellis (France).
- Apr. 2015 “*Internal controllability of quasilinear first-order hyperbolic systems with a reduced number of controls*”.  
**Control of Partial Differential Equations @GSSI**, L'Aquila (Italy).  
[https://www.gssi.it/images/seminars/book-of-abstracts\\_GSSI2015.pdf](https://www.gssi.it/images/seminars/book-of-abstracts_GSSI2015.pdf)
- Apr. 2015 “*Quelques résultats de contrôlabilité de systèmes paraboliques faisant intervenir la géométrie*”.  
**Journées Jeunes EDPistes Français**, Saint-Brévin (France).
- Jan. 2015 “*Controllability of coupled transport equations*”.  
**Workshop on Control Systems and Identification Problems**, Valparaíso (Chile).  
<http://ecerpa.mat.utfsm.cl/cosip2015/Speakers.html>

- Apr. 2014 “*Geometric conditions for the controllability of parabolic systems*”  
**Control of PDEs**, Paris (France).
- Feb. 2014 “*Contrôle frontière de systèmes paraboliques en dimension  $N$  d’espace*”  
**Journée Jeunes Contrôleurs**, Paris (France).
- Aug. 2013 “*Distributed controllability of some 1D space-dependent parabolic systems*”  
**Mathematical Congress of the Americas 2013 - Control and Stabilization for Partial Differential Equations**, Guanajuato (Mexico).
- Nov. 2012 “*Boundary approximate controllability of some linear parabolic systems*”  
**Thematic school of the GDRE ConEDP: Control of PDE’s, interactions and application challenges**, Marseille (France).
- Jun. 2012 “*Hautus test for the approximate controllability of linear parabolic systems*”  
**Control of Fluid-Structure Systems and Inverse Problems, Toulouse workshop 2012**, Toulouse (France).
- Jun. 2012 “*Test de Hautus pour les systèmes paraboliques linéaires*”  
**Journées Nice-Toulon-Marseille à Porquerolles**, Hyères (France).
- Nov. 2011 “*Null-controllability for some parabolic systems with controls acting on different parts of the domain and its boundary*”  
**Conference of the European GDR Control of PDEs**, Marseille (France).

#### Conferences attended (no talk)

- Mar. 2023 **Control and Related Fields**, Seville (Spain).  
<http://departamento.us.es/edan/CRF23/>

#### Conferences attended (no talk) in pluripotential theory or related fields

- Oct. 2019 **Simons Semester - Geometry and analysis in function and mapping theory on Euclidean and metric measure spaces**, Warsaw (Poland).  
<https://www.impan.pl/en/activities/banach-center/conferences/19simons-xii-conf1>
- Feb. 2019 **Thematic month: Complex Geometry**, Marseille (France).  
<https://conferences.cirm-math.fr/2060.html>

#### Seminars

- Jul. 2023 “*Equivalent 1D first-order linear hyperbolic systems and null controllability*”.  
**Seminário de EDP e Matemática Aplicada**, Online.  
[https://www.youtube.com/watch?v=leud0wYIKys&ab\\_channel=SEMINARIO\[...\]](https://www.youtube.com/watch?v=leud0wYIKys&ab_channel=SEMINARIO[...])

- Mar. 2019 *“Minimal control time for one-dimensional first-order hyperbolic systems”*.  
**Séminaire Modélisation, Analyse et Calcul**, Toulouse (France).
- Jul. 2018 *“Observability inequalities with compact remainder”*, School of Mathematical Sciences, Tongji University, Shanghai (China).
- Sep. 2017 **Control and Inverse Problems working group**, Marseille, (France).
- Mar. 2017 **Seminar of Applied Mathematics**, Jinan, (China).
- Nov. 2016 **Seminar of Applied Mathematics**, Krakow (Poland).
- Nov. 2016 **Seminar of Optimization and Control**, Krakow (Poland).
- Mar. 2016 **Seminar**, Besançon (France).
- Mar. 2016 **Seminar**, Nancy (France).
- Mar. 2016 **Seminar**, Marseille (France).
- Jul. 2015 **Seminar**, Marseille (France).
- Feb. 2013 **Seminar**, Sevilla (Spain).
- Feb. 2012 **Seminar**, Besançon (France).
- Dec. 2011 **Seminar**, Tokyo (Japan).

## Teaching activities

### March 2017: Lectures at the Shandong University (16h)

- Introduction to linear control theory (Lectures)  
Postgraduate and Ph.D. level.  
Lecture notes (64 pp.) available at: [https://math-golive.com/\[...\]/golive\\_lecture\\_notes.pdf](https://math-golive.com/[...]/golive_lecture_notes.pdf)  
*Also available in hard copy at the library of the Shandong University.*

### 2013-2014: A.T.E.R. at the University of Aix-Marseille (192h)

- Optimization and control (Tutorials)  
2<sup>nd</sup> year of the "PDE and Scientific Computing" Master.
- Basics in Mathematics (Lectures)  
1<sup>st</sup> year of the Biology degree.
- Geometry and arithmetic (Tutorials)  
1<sup>st</sup> year of the Mathematic degree.



- Linear and Multilinear Algebra (Tutorials)  
2<sup>nd</sup> year of the Engineering degree.
- Basics in Mathematics (Tutorials)  
1<sup>st</sup> year of the Engineering degree.

### 2010-2013: Teaching at the University Aix-Marseille (64h/year)

- Basics in Mathematics (Tutorials)  
1<sup>st</sup> year of the Biology degree.
- Linear and Multilinear Algebra (Tutorials)  
2<sup>nd</sup> year of the Engineering degree.
- Power and Fourier Series (Tutorials)  
2<sup>nd</sup> year of the Mathematics and Computer Science degree.
- Differential Calculus (Tutorials)  
2<sup>nd</sup> year of the Mathematics and Computer Science degree.
- Linear Algebra (Tutorials)  
2<sup>nd</sup> year of the Mathematics and Computer Science degree.
- Linear Algebra (Tutorials)  
1<sup>st</sup> year of the Biology degree.

### Miscellaneous

- French : mother tongue
- Computing : Scilab, Latex
- English : advanced
- Polish : B2 level