

Alejandro Lancho Serrano

CONTACT INFORMATION

Chalmers University of Technology
Department of Electrical Engineering
EDIT building, Hörsalsvägen 9-11

E-mail: lancho@ieee.org
sites.google.com/view/lancho

EDUCATION

Universidad Carlos III de Madrid, Leganés, Madrid

Ph.D., Multimedia and Communications **01/02/2015 – 24/06/2019**

- Thesis title: *Fundamental limits of short-packet wireless communications*
- Advisor: Prof. Tobias Koch

M.S., Multimedia and Communications **12/09/2013 – 13/07/2014**

- Thesis Title: *Efficient and Robust Synchronization and Channel Estimation in CoMP OFDM systems*
- Advisor: Prof. Víctor P. Gil Jiménez

B.S., Communication Systems Engineering **12/09/2009 – 12/07/2013**

PROFESIONAL EXPERIENCE

Chalmers University of Technology, Gothenburg, Sweden

Postdoctoral researcher **01/10/2019 – present**

- Supervised by Prof. Giuseppe Durisi

Chalmers University of Technology, Gothenburg, Sweden

FPU internship Ministerio de Educación, Cultura y Deporte **01/09/2017 – 01/12/2017**

- Competitive grant
- Supervised by Prof. Giuseppe Durisi

Universidad Carlos III de Madrid, Leganés, Madrid

FPU Grant Ministerio de Educación, Cultura y Deporte **12/09/2015 – 31/01/2019**

- Competitive grant
- Ph.D. student in the Signal Processing group supervised by Prof. Tobias Koch

Master Grant Ministerio de Educación, Cultura y Deporte **01/09/2013 - 31/01/2015**

- Competitive grant
- Involved in the Signal Theory and Communications Department

Colaboration Grant Ministerio de Educación, Cultura y Deporte **01/12/2012 – 01/06/2013**

- Competitive grant
- Involved in the Communications group
- Implementation of a UMTS base station with the main functionality using USRP nodes

Unitronics S.A.

Scholarship **29/02/2013 – 29/06/2013**

- Worked in the Communication Architecture Department deploying wireless networks

HONORS AND
AWARDS

- Ph.D. thesis with grade: Excellence (*cum laude*)
- Finalist Jack Keil Wolf Student Paper Award at 2017 IEEE Int. Symp. Inf. Theory (ISIT)
- FPU program mobility internship grant 2016–2017 (competitive)
- UC3M mobility internship grant 2016–2017 (competitive)
- Third National Thesis Award (undergraduate level)
- FPU program Ph.D. Grant 2015–2019 (competitive)
- Spanish Repsol Inspire program. Overcame the first stage
- M.Sc thesis with grade: 10/10
- Master Grant Universidad Carlos III de Madrid (competitive) 2013–2015
- B.Sc thesis with grade: 10/10 (distinction)
- B.Sc achieving rank 2 in the class (9 out of 6.71)
- Collaboration Grant Ministerio de Educación Cultura y Deporte (competitive) 2013
- Excellence award. Best 20 students at Universidad Carlos III de Madrid (2012)
- Excellence grant (Madrid, 2010 and 2012)
- Excellence certification (Madrid, 2009)

TEACHING
EXPERIENCE

Universidad Carlos III de Madrid, Leganés, Madrid

- Communication Theory Laboratory (Undergraduate level) **2017 – 2018**
- Digital Communications (Undergraduate level) **2016 – 2017**
- Communication Theory Laboratory (Undergraduate level) **2016 – 2017**
- Communication theory laboratory (Undergraduate level) **2013 – 2014**
- Mobile communications laboratory (Undergraduate level) **2013 – 2014**
- Access network technologies laboratory (Undergraduate level) **2013 – 2014**
- Communication channels and systems laboratory (Undergraduate level) **2013 – 2014**
- Digital communications overview (Undergraduate level) **2013 – 2014**

RESEARCH
PROJECTS

ERC: European Research Council

ERC Starting Grant **2017 – 2022**

- Title: *Information Theory for Low-Latency Wireless Communications*
 - Role: project member
 - Principal investigator: Tobias Koch

Spanish Ministry of Economy & Competitiveness and Spanish National Research Agency

Proyecto I+D+i Retos Investigación **2016 – 2018**

- Title: *FLUID: Finite-length iterative decoding: fundamental limits, practical constructions and inference*
 - Role: project member
 - Principal investigator: Gonzalo Vázquez-Vilar and Pablo M. Olmos

Spanish Ministry of Economy & Competitiveness

Proyecto I+D+i Retos Investigación **2014 – 2016**

- Title: *Overhead-Throughput-Optimal Signaling Schemes for Next-Generation Wireless Networks*
 - Role: project member
 - Principal investigator: Tobias Koch

Spanish Ministry of Science & Innovation

Plan Nacional de I+D+i **2012 – 2015**

- Title: *General Radio concepts for ENergy cogNizant mobile communicatioNs-SYSTem*
 - Role: project member
 - Principal investigator: Víctor P. Gil Jiménez

- SKILLS
- *Languages*: Spanish (native), English (fluent)
 - *Programming*: Matlab, Python (basic), NI Labview
- PUBLICATIONS: PH.D. DISSERTATION PUBLICATIONS: PREPRINTS
- [D1] A. Lancho, "Fundamental limits of short-packet wireless communications", Ph.D. dissertation, Universidad Carlos III de Madrid, Jun. 2019.
- [P1] A. Lancho, J. Östman, G. Durisi, T. Koch and G. Vazquez-Vilar, "Saddlepoint approximations for short-packet wireless communications", Sep. 2019. [arXiv: 1904.10442 [cs.IT]] (submitted to the IEEE Transactions on Wireless Communications).
- PUBLICATIONS: JOURNAL PUBLICATIONS
- [J1] A. Lancho, T. Koch and G. Durisi, "On single-antenna Rayleigh block-fading channels at finite blocklength", IEEE Transactions on Information Theory, accepted, 2019.
- [J2] Víctor P. Gil Jiménez, Alejandro Lancho Serrano, Borja Genovés Guzmán and Ana García Armada, "Learning Mobile Communications Standards Through Flexible Software Defined Radio Base Stations", IEEE Communications Magazine. vol. 55, no. 6, pp. 116-123, May 2017. [IEEEXplore]
- [J3] Borja Genovés Guzmán, Alejandro Lancho Serrano and Víctor P. Gil Jiménez, "Cooperative Optical Wireless Transmission for improving performance in indoor scenarios for Visible Light Communications", IEEE Transactions on Consumer Electronics. vol. 61, no. 4, pp. 393-401, Nov. 2015. [IEEEXplore]
- PUBLICATIONS: CONFERENCE PUBLICATIONS
- [C1] A. Lancho, J. Östman, G. Durisi, T. Koch and G. Vazquez-Vilar, "Saddlepoint approximations for Rayleigh block-fading channels", in Proc. IEEE Int. Symp. Inf. Theory (ISIT), Paris, France, Jul. 2019.
- [C2] Gonzalo Vazquez-Vilar, Albert Guillámin i Fàbregas, Tobias Koch and Alejandro Lancho. "Saddlepoint approximation of the error probability of binary hypothesis testing", in Proc. IEEE Int. Symp. Inf. Theory (ISIT). Vail, USA, Jun. 17-22, 2018. [IEEEXplore]
- [C3] Alejandro Lancho, Tobias Koch and Giuseppe Durisi. "Normal Approximations for Fading Channels", in Proc. 52th Annual Conference on Information Sciences and Systems, Princeton, NJ, Mar. 21-23, 2018. **Invited paper** [IEEEXplore]
- [C4] Josep Font-Segura, Gonzalo Vazquez-Vilar, Alfonso Martinez, Albert Guillámin i Fàbregas and Alejandro Lancho. "Saddlepoint Approximations of Lower and Upper Bounds to the Error Probability in Channel Coding", in Proc. 52th Annual Conference on Information Sciences and Systems, Princeton, NJ, Mar. 21-23, 2018. **Invited paper** [IEEEXplore]
- [C5] Alejandro Lancho, Tobias Koch and Giuseppe Durisi. "A High-SNR Normal Approximation for Single-Antenna Rayleigh Block-Fading Channels", in Proc. IEEE Int. Symp. Inf. Theory (ISIT), Aachen, Germany, Jun. 2017. **Finalist IEEE Jack Keil Wolf ISIT Student Paper Award** [IEEEXplore]
- [C6] Alejandro Lancho Serrano and Víctor P. Gil Jiménez "Sincronización y Estimación de canal eficiente y robusta en sistemas CoMP OFDM", XXIX Symposium Nacional de la Unión Científica Internacional de Radio, Valencia, Spain, Sep. 2014.
- INVITED TALKS
- [T1] Alejandro Lancho, Johan Östman, Tobias Koch and Gonzalo Vazquez-Vilar. "Finite-blocklength approximations for noncoherent Rayleigh block-fading channels", 53rd Asilomar Conference on Signals, Systems and Computers, Pacific Grove, California, USA, Nov. 03-06, 2019.

[T2] Alejandro Lancho, Tobias Koch and Giuseppe Durisi. "Normal Approximations for Fading Channels", in Proc. 52th Annual Conference on Information Sciences and Systems, Princeton, NJ, Mar. 21-23, 2018.