Christian Lameiro Gutiérrez

Curriculum Vitae

Contact

Assistant Professor (University of Paderborn, Germany)
Signal and System Theory Group, Department of Electrical Engineering and Information Technology

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Born in Santander, Spain, 2 February 1987

Education

Ph.D. in Telecommunication Engineering. Dissertation title: "Cooperative Techniques for Interference Management in Wireless Networks". *Summa cum laude* (with honors). University of Cantabria. May 2015

M.Sc. in Information Technologies and Communications in Mobile Networks. University of Cantabria, September 2011

B.Sc. in Telecommunication Engineering. University of Cantabria, September 2010

Academic employment

06/2015–present	Assistant Professor ("Akademischer Rat auf Zeit") University of Paderborn
06/2011–05/2015	Research Assistant (Ministry grant) University of Cantabria
10/2010–03/2011	Contract Researcher University of Cantabria

Research interests

Signal processing for interference-limited communications

Optimization techniques for wireless communications

Statistical signal processing

Teaching experience

University of Paderborn

- Tutorials for Statistical Signal Processing. 2015-2016 & 2016-2017 & 2017-2018 & 2018-2019
- Tutorials for Probability for Engineers. 2015-2016 & 2016-2017 & 2017-2018
- Student supervision in Topics in Signal Processing. 2016–2017
- Supervision of a PhD. student. Topic: "Improper Gaussian signaling for multiuser communications". 2017–present
- Supervised two Bachelor's Theses and one Master's Thesis

University of Cantabria

- Mathematical Methods for Telecommunications (laboratory). 2013-2014 & 2014-2015
- Signal Processing in Wireless Communications (laboratory). 2014-2015

Visiting researcher

06/2014–09/2014 *Signal & System Theory Group, University of Paderborn*
Topic: Improper signaling for underlay cognitive networks

03/2013–06/2013 *Associate Institute for Signal Processing, Technical University of Munich*
Topic: Spatial interference shaping constraints for underlay cognitive networks

Successful grant proposals

Improper Gaussian signaling schemes for interference-limited communications. German Research Foundation. 2016–2019

Collaboration in funded research projects

Robustly Identifying Dependent Components in Multiple High-Dimensional Data Sets Based on Few Observations. German Research Foundation. 2018–2020

Interference Management with Realistic Assumptions on the Knowledge of Channel State Information at the Transmitters. German Research Foundation. 2016–2018

Radio Access Techniques for Heterogeneous Wireless Networks (RACHEL). Ministry of Economy (Spain). 2014–2016

Research and Development of New Signal Processing Techniques. University of Cantabria. 2011–2015

Cooperative and Cognitive Strategies for Interference Management in Wireless Communication Networks (COSIMA). Ministry of Science and Innovation (Spain). 2011–2014

Foundations and Methodologies for Future Communication and Sensor Networks (COMONSENS). Ministry of Science and Innovation (Spain). 2008–2013

Advanced MIMO Systems for Maximum Reliability and Performance (MIMAX). European Comission. Seventh Research Framework Programm. 2008–2011

External Reviewer

- IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, IEEE Transactions on Communications, IEEE Wireless Communications Letters, IEEE Signal Processing Letters, Sensors, and Springer Science China Information Sciences.
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2018 & 2019), IEEE Statistical Processing Workshop (SSP 2018), International ITG Workshop on Smart Antennas (WSA 2017), IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2013 & 2017), International Symposium on Signals, Systems and Electronics 2012 (ISSSE 2012), IEEE Global Communications Conference (GLOBECOM 2011), and IEEE Symposium on Computers and Communications (ISCC 2011).

Memberships

IEEE Member

IEEE Signal Processing Society Member

Undergraduate research experience

10/2009–07/2010 *Introduction to research scholarship for university students*
University of Cantabria

07/2009–09/2009 *Summer research scholarship for university students*
Institute for Applied Physics in Madrid, Spain (CSIC)

Publications

International journals

C. Lameiro, I. Santamaría, and P. Schreier, "Improper gaussian signaling for multiple-access channels in underlay cognitive radio," *IEEE Transactions on Communications*, pp. 1–1, 2018.

I. Santamaría, P. Crespo, C. Lameiro, and P. Schreier, "Information-theoretic analysis of a family of improper discrete constellations," *Entropy*, vol. 20, no. 1, 2018.

C. Lameiro, W. Utschick, and I. Santamaría, "Spatial interference shaping for underlay MIMO cognitive networks," *Signal Processing*, vol. 134, pp. 174–184, 2017.

T. Hasija, C. Lameiro, and P. Schreier, "Determining the dimension of the improper signal subspace in complex-valued data," *IEEE Signal Processing Letters*, vol. 24, no. 11, pp. 1606–1610, 2017.

C. Lameiro, I. Santamaría, and P. Schreier, "Rate region boundary of the SISO Z-interference channel with improper signaling," *IEEE Transactions on Communications*, vol. 65, pp. 1022–1034, March 2017.

C. Lameiro, O. González, J. García-Naya, I. Santamaría, and L. Castedo, "Experimental evaluation of interference alignment for broadband WLAN systems," *EURASIP Journal on Wireless Communications and Networking*, no. 1, p. 180, 2015.

C. Lameiro, I. Santamaría, and P. Schreier, "Benefits of improper signaling for underlay cognitive radio," *IEEE Wireless Communications Letters*, vol. 4, no. 1, pp. 22–25, 2015.

Ó. González, C. Lameiro, and I. Santamaría, "A quadratically convergent method for interference alignment in MIMO interference channels," *IEEE Signal Processing Letters*, vol. 21, no. 11, pp. 1423–1427, 2014.

C. Lameiro, J. Vía, and I. Santamaría, "Amplify-and-forward strategies in the two-way relay channel with analog Tx-Rx beamforming," *IEEE Transactions on Vehicular Technology*, vol. 62, no. 2, pp. 642–654, 2013.

International conferences

M. Soleymani, C. Lameiro, P. Schreier, and I. Santamaría, "Improper signaling for OFDM underlay cognitive radio systems," in *Proceedings of the IEEE Statistical Signal Processing Workshop (SSP)*, pp. 722–726, 2018.

C. Lameiro, I. Santamaría, and P. Schreier, "Performance analysis of maximally improper signaling for multiple-antenna systems," in *Proceedings of the IEEE Wireless Communications and Networking Conference (WCNC)*, pp. 1–6, 2018.

C. Lameiro and P. Schreier, "A sparse CCA algorithm with application to model-order selection for small sample support," in *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 4721–4725, 2017.

C. Lameiro and P. Schreier, "Cross-validation techniques for determining the number of correlated components between two data sets when the number of samples is very small," in *Conference Records of the Asilomar Conference on Signals, Systems and Computers*, pp. 601–605, 2016.

C. Lameiro, I. Santamaría, W. Utschick, and P. Schreier, "Maximally improper interference in underlay cognitive radio networks," in *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 3666–3670, 2016.

J. Fanjul, C. Lameiro, I. Santamaría, J. García-Naya, and L. Castedo, "An experimental evaluation of broadband spatial IA for uncoordinated MIMO-OFDM systems," in *Proceedings of the IEEE International Conference on Digital Signal Processing (DSP)*, pp. 570–574, 2015.

C. Lameiro, I. Santamaría, and P. Schreier, "Analysis of maximally improper signalling schemes for underlay cognitive radio," in *Proceedings of the IEEE International Conference on Communications (ICC)*, pp. 1–6, 2015.

C. Lameiro, W. Utschick, and I. Santamaría, "Interference-temperature limit for cognitive radio networks with MIMO primary users," in *Conference Records of the Asilomar Conference on Signals, Systems and Computers*, pp. 1–5, 2014.

C. Lameiro, I. Santamaría, and W. Utschick, "Interference shaping constraints for underlay MIMO interference channels," in *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 7313–7317, 2014.

C. Lameiro, W. Utschick, and I. Santamaría, "Spatial shaping and precoding design for underlay MIMO interference channels," in *Proceedings of the 18th International ITG Workshop on Smart Antennas (WSA)*, pp. 1–8, 2014.

C. Lameiro, O. González, and I. Santamaría, "An interference alignment algorithm for structured channels," in *Proceedings of the IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, pp. 295–299, 2013.

C. Lameiro and I. Santamaría, "Degrees-of-freedom for the 4-user SISO interference channel with improper signaling," in *Proceedings of the IEEE International Conference on Communications (ICC)*, pp. 3053–3057, 2013.

O. González, C. Lameiro, J. Vía, C. Beltrán, and I. Santamaría, "Computing the degrees of freedom for arbitrary MIMO interference channels," in *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 4399–4403, 2013.

C. Lameiro, O. González, J. Vía, I. Santamaría, and R. Heath, "Pre- and post-FFT interference leakage minimization for MIMO OFDM networks," in *Proceedings of the International Symposium on Wireless Communication Systems (ISWCS)*, pp. 556–560, 2012.

C. Lameiro, J. Vía, and I. Santamaría, "A distributed algorithm for two-way multiple-relay networks," in *Proceedings of the IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*, pp. 105–108, 2012.

O. González, C. Lameiro, J. Vía, I. Santamaría, and R. Heath, "Interference leakage minimization for convolutive MIMO interference channels," in *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 2829–2832, 2012.

C. Lameiro, A. Nazábal, F. Gholam, J. Vía, and I. Santamaría, "Capacity region of the two-way multiantenna relay channel with analog Tx-Rx beamforming," in *Proceedings of the 3rd International ICST Conference on Mobile Lightweight Wireless Systems (Mobilight)*, pp. 1–17, 2011.

I. Santamaría, J. Vía, A. Nazábal, and C. Lameiro, "Capacity region of the multiantenna Gaussian broadcast channel with analog Tx-Rx beamforming," in *Proceedings of the 5th International ICST Conference on Communications and Networking in China (CHINACOM)*, pp. 1–6, 2010.