

Selma BELHADJ AMOR

Contact Information

CITI Laboratory at INSA-Lyon
Domaine Scientifique de la Doua
Bâtiment Claude Chappe
6 avenue des Arts
69621 Villeurbanne, France.

+33 6 50 26 14 88
✉ selma.belhadjamor@gmail.com
🌐 cybernets.inria.fr/collaborators/belhadj-amor/

Current Position

Since 06/2015 **Post-Doctoral Fellow at INRIA (Institut National de Recherche en Informatique et Automatique)**, Lyon, France.

Research appointment with Dr. Samir M. Perlaza and Prof. Jean-Marie Gorce

Research Interests:

- Network Information Theory
- Cooperative Communications
- Simultaneous Energy and Information Transmission
- Decentralized Networks

Education

2011–2015 **Ph.D. in Communications and Electronics**, *with highest distinction*, Communications and Electronics Department, Telecom-ParisTech, France.

Title: “*Capacity-Gains with Feedback for Multi-User Channels*”.

Defended on March 31, 2015 at Telecom-ParisTech.

Jury Members:

- Jean-Marie Gorce, Professor at INSA-Lyon, (President)
- Samson Lasaulce, Professor at Supelec, (Reviewer)
- Emre Telatar, Professor at EPFL, (Reviewer)
- Pablo Piantanida, Assistant Professor at Supelec, (Examiner)
- Philippe Ciblat, Professor at Telecom ParisTech, (Ph.D. Advisor)
- Michèle Wigger, Assistant Professor at Telecom ParisTech, (Ph.D. Advisor)

2008–2011 **B.Sc. and M.Sc. in Engineering - Telecommunications Track**, *with distinction*.
Grenoble INP Ensimag, France.

2010–2011 **M.Sc. in Mathematics and Computer Science - Security and Cryptology Track**,
with distinction.

Université Joseph Fourier (UJF)– Grenoble INP Ensimag, Grenoble, France.

2010–2011 **Erasmus Exchange Student**.

School of Computer and Communication Sciences (IC),
Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland.

2006–2008 **Preparatory Classes (CPGE) MP*-Track**.

Preparatory Institute of Scientific and Technological Studies - Tunis.

Research Experience

10–12/2016 **Visiting Research Scholar at the Department of Electrical and Computer Engineering (ECE), National University of Singapore (NUS), Singapore**.

Research appointment with Dr. Vincent Y. F. Tan.

Research Interests :

- Finite blocklength;
- Cooperative communications;
- Simultaneous energy and information transmission.

- 03–05/2016 **Visiting Research Scholar at the School of Engineering and Applied Science, Princeton University**, Princeton NJ, USA.
Research appointment with Prof. H. Vincent Poor.
Research Interests :
 - Simultaneous energy and information transmission;
 - Decentralized networks;
 - Cooperative communications.
- 2011/2015 **Research Assistant at Telecom-ParisTech, Comelec Department**, Paris, France.
Supervisor: Dr. Michèle Wigger
Research Interests :
 - Network information theory;
 - Feedback communications;
 - Gaussian channels.
- 02–08/2011 **Research Assistant at EPFL, Information Theory Laboratory (LTHI), EPFL**, Lausanne, Switzerland.
M.Sc. Final Project Dissertation: “*Application of Polar Codes to Cryptography*”.
Supervisor: Prof. Emre Telatar.
Research Interests :
 - Polar Codes;
 - Algebraic coding theory
 - Code-Based Cryptography.

Teaching Experience

- Since 09/2015 **Teaching Assistant at INSA-Lyon, Telecommunications Department**, Lyon, France.
 - Tutored classes: algorithmics and C programming (Prof. Tanguy Risset), Unix systems, Shell and basic programming (Dr. François Lesueur)
- 2011–2014 **Teaching Assistant at Telecom-ParisTech, Comelec Department**, Paris, France.
 - Tutored classes: digital communications and signal processing (Prof. Philippe Ciblat), error-correcting codes (Prof. Ghaya Rekaya), and information theory (Dr. Michèle Wigger).

Journal Papers (Pre-prints)

- (J4) S. Belhadj Amor and S. M. Perlaza, “Decentralized K -user Gaussian multiple access channels,” Tech. Rep. RR-8949, INRIA, Lyon, France, Aug. 2016.
- (J3) S. Belhadj Amor, S. M. Perlaza, and H. V. Poor, “Decentralized simultaneous energy and information transmission in multiple access channels,” Tech. Rep. RR-8847, INRIA, Lyon, France, Apr. 2016, to be submitted to *IEEE Transactions on Information Theory*, Apr. 2016.
- (J2) S. Belhadj Amor, S. M. Perlaza, I. Krikidis, and H. V. Poor, “Feedback enhances simultaneous information and energy transmission in multiple access channels,” Tech. Rep. RR-8804, INRIA, Lyon, France, Nov. 2015, submitted to *IEEE Transactions on Information Theory*, Nov. 2015.

Journal Papers

- (J1) S. Belhadj Amor, Y. Steinberg, and M. Wigger, “MIMO MAC-BC duality with linear-feedback coding schemes,” *IEEE Transactions on Information Theory*, vol. 61, no. 11, pp. 5976–5998, Nov 2015.

Conference Papers

- (C9) S. Belhadj Amor and S. M. Perlaza “Decentralized K -user Gaussian multiple access channels,” submitted to *the International conference on NETWORK Games, COntrol and OPTimization (Netgcoop 2016)*, Avignon, France, Nov. 2016.
- (C8) S. Belhadj Amor, S. M. Perlaza, I. Krikidis, and H. V. Poor, “Feedback enhances

simultaneous energy and information transmission in multiple access channels,” in *Proc. 2016 IEEE International Symposium on Information Theory*, Barcelona, Spain, Jul. 2016.

(C7) S. Belhadj Amor and S. M. Perlaza, “Fundamental limits of simultaneous energy and information transmission,” in *Proc. of the 23rd International Symposium on Telecommunications(ICT) (Invited Paper)*, Thessaloniki, Greece, May 2016.

(C6) S. Belhadj Amor and S. M. Perlaza, “Decentralized simultaneous energy and information transmission in multiple access channels,” in *Proc. of the 50th Annual Conference on Information Sciences and Systems (CISS)*, Princeton, NJ, USA, Mar. 2016.

(C5) S. Belhadj Amor, S. M. Perlaza, and I. Krikidis, “Simultaneous energy and information transmission in Gaussian multiple access channels,” in *Proc. 5th International Conference on Communications and Networking (ComNet)*, Hammamet, Tunisia, Nov. 2015, (invited paper).

(C4) S. Belhadj Amor and M. Wigger, “Linear-feedback MAC-BC duality for correlated BC-noises, and iterative coding schemes,” in *Proc. of the 53rd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, USA, Oct. 2015.

(C3) S. Belhadj Amor, “A new coding scheme for discrete memoryless MACs with common rate-limited feedback,” in *Proc. of 2015 European Conference on Networks and Communications (EuCNC)*, pp. 72–76, Paris, France, Jun. 2015.

(C2) S. Belhadj Amor, Y. Steinberg, and M. Wigger, “MAC-BC duality with linear-feedback schemes,” in *Proc. 2014 IEEE International Symposium on Information Theory*, pp. 1737–1741, Honolulu, HI, USA, Jun. 2014.

(C1) S. Belhadj Amor, Y. Steinberg, and M. Wigger, “Duality with linear-feedback schemes for the scalar Gaussian MAC and BC,” in *Proc. of 2014 International Zurich Seminar on Communications*, pp. 25–28., Zurich, Switzerland, Feb. 2014.

Posters

(P1) S. Belhadj Amor, Y. Steinberg, and M. Wigger, “MAC-BC Duality with Linear-Feedback Schemes,” Poster presented at the EPFL-UPEMLV Workshop on Information Theory and Random Matrices, Lausanne, September 11, 2014.

Tutorials and Invited Talks

(IT6) S. Belhadj Amor, “Simultaneous Energy and Information Transmission,” Invited talk at the School of Engineering and Applied Science, Princeton University, Princeton NJ, USA, April 21, 2016.

(IT5) S. Belhadj Amor, “Simultaneous Energy and Information Transmission,” Invited talk at the Center for Wireless Communication and Signal Processing Research (CWCSRP), ECE Department, New Jersey Institute of Technology (NJIT), Newark NJ, USA, April 15, 2016.

(IT4) S. Belhadj Amor, “Simultaneous Energy and Information Transmission in Gaussian Multiple Access Channels with and without Feedback,” Invited talk at the GdR-ISIS meeting entitled “*Recent Advances in Network Information Theory and Coding Theory*,” Bibliothèque Marie Curie, Université de Lyon, Lyon, November 23, 2015.

(IT3) S. Belhadj Amor, “Simultaneous Energy and Information Transmission in Gaussian Multiple Access Channels with and without Feedback,” Invited talk at the SOCRATE Seminar, INRIA, Lyon, France, November 16, 2015.

(IT2) S. Belhadj Amor, “Capacity-Gains with Feedback for Multi-User Channels,” Invited talk at CITI Laboratory, INSA-Lyon, April 29, 2015, Lyon, France.

(IT1) S. Belhadj Amor, “A New Coding Scheme for Discrete Memoryless MACs with Common Rate-Limited Feedback,” Labex Digicosme SciLEx/ComEx Research Day, Supelec, Gif-sur-Yvette, France, March 23, 2015.

Reviewing Activities

- IEEE International Symposium on Information Theory (ISIT)
- IEEE Information Theory Workshop (ITW)
- Iran Workshop on Communication and Information Theory (IWCIT)
- IEEE GLOBECOM
- IEEE International Conference on Communications (ICC)
- IEEE Wireless Communications and Networking Conference (WCNC)
- IEEE International Symposium on Personal, Indoor and Mobile Radio Comm.-(PIMRC)
- IEEE Communications Letters
- IEEE EURASIP Journal on Wireless Communications and Networking
- IEEE Transactions on Signal and Information Processing over Networks
- Journal of Selected Topics in Signal Processing
- IEEE Transactions on Communications

Languages

- **French:** Bilingual
- **Arabic:** Bilingual
- **English:** Proficient (TOEIC: 990/990)
- **German:** Pre-Intermediate (A2-B1)

Computer Skills

Systems Linux, Unix, Windows.

Languages C/C++, Ada, Java, Assembly, Shell Unix, Latex.

Mathematical Mathematica, Matlab, Sage, R, Maple.

Software