Curriculum Vitae

Prof. Antoine O. Berthet
École Supérieure d'Electricité (Supélec)
Department of Telecommunications
3, rue Joliot Curie, Plateau de Moulon
91192 Gif-sur-Yvette, France
Phone : +33 (0)1 69 85 14 62
Fax : +33 (0)1 69 85 14 69
E-mail : antoine.berthet@supelec.fr

Summary

Antoine O. Berthet was born in Neuilly-sur-Seine, France, in July 1974. He received the Engineer's degree from Télécom SudParis in September 1997, the M.Sc. degree in Signal Processing from Télécom ParisTech in September 1997, the Ph.D. degree in Computer Science, Electronics and Telecommunications from University Pierre et Marie Curie (UPMC) in December 2001, and the HDR degree (accreditation to supervise research) from UPMC in November 2007. In parallel, since 2006, he has been studying the Middles Ages mainly in Western Europe. He received the Master's degree in Medieval History from Paris-Sorbonne University (Paris IV) in September 2010. From January 1998 to October 2000, he was with France Telecom Research and Development, Issy-les-Moulineaux (now Orange Labs). From October 2000 to October 2001, he joined Alcatel Space Industries (now Thalès Alenia Space) and worked on high data rate modem design for satellites. Since October 2001, he has been with the Department of Telecommunications at Supélec where he currently holds a position of Full Professor. His research interests include information theory, error-correction coding theory, codes on graphs, iterative decoding and iterative receiver design. He has authored or co-authored more than 60 scientific papers in these areas and owns 10 patents.

Education

1997 : Engineer's degree from Télécom SudParis (ex Télécom INT).

1997 : M.Sc. degree from Télécom ParisTech (ex ENST).

2001 : Ph.D. degree from University Pierre et Marie Curie (UPMC).

2007 : HDR degree from University Pierre et Marie Curie (UPMC).

2010 : Master's degree in Medieval History from Paris IV Sorbonne University.

Languages

Languages : French (Native), English (Fluent), Italian (Conversational), German (Proficient), Latin (Proficient), Ancient Greek (Proficient)

Programming languages : C ANSI, MATLAB

Work experience

1998–2000 : Research Engineer (and Ph.D. Student) at France Telecom (CNET).

2000–2001 : Senior Research Engineer at Alcatel Space Industries.

2001–2011 : Professor–Researcher at Supélec (Full Professor since Jan. 2008).

Former teaching activities

- **Undergraduate and senior undergraduate level :** Lectures in *Coding theory* (3rd academic year in several French grandes écoles [1], about 130 cumulated hours from 1998 to 2008) ; Lectures in *Digital communications* (3rd academic year in several French grandes écoles, more than 80 cumulated hours from 2003 to 2005) ; Lectures in *Coded modulations*, (3rd academic year in Supélec, 6 hours/year from 2002 to 2006).

Current teaching activities

- **Undergraduate and senior undergraduate level :** Tutorial class in *Probability theory* (1st academic year in Supélec, 6 hours/year) ; Tutorial class in *Probability and random processes* (2nd academic year in Supélec, 6 hours/year) ; Tutorial class in *Digital communications* (2nd academic year in Supélec, 6 hours/year) ; Supervision of laboratory work and short projects in *Error-correction coding theory* (1st, 2nd and 3rd academic years in Supélec, about 100 hours/year).

1. Télécom SudParis (ex - Télécom INT), Ecole spéciale de mécanique et d'électricité (ESME Sudria), École supérieure d'ingénieurs en électronique et électrotechnique (ESIEE Paris), and Institut supérieur d'électronique de Paris (ISEP). The "grandes écoles" (literally in French "higher schools") of France are higher education establishments outside the main framework of the French university system. The grandes écoles select students for admission based chiefly on national ranking in competitive written and oral exams.

- **Graduate level :** Designer of the Master's program *Advanced Wireless Communications Systems* jointly empowered by Supélec, ENS Cachan and University Paris XI (submission of the project in November 2007 and final acceptance by the French Ministry of Higher Education and Research in 2008) ; Member of the Executive and Program Committees from 2008 to 2011 ; Lectures in *Channel coding* in the Master's program (ref. SAR–C52, 30 hours/year) ; Research seminar *Codes on graphs and iterative decoding* in the Master's program (ref. SAR–S2, 12 hours/year) ; Supervision of research projects in *Error-correction coding theory* (about 10 hours/project).
- **Continuing education :** Responsible for the following customized courses : *Iterative receivers in digital communications : From turbo codes to the turbo principle* (ref. MG20, about 35 hours over 5 days) and *Transmission over MIMO wireless channels : Theory and practice* (ref. MG21, about 35 hours over 5 days). Lecturer in the course *Réception en communications numériques : Théorie et simulation* (ref. MG16).

Research activities

- **Fields of expertise :** Information theory, error-correction coding theory, codes on graphs, iterative decoding, probabilistic graphical models.
- **Current research topics :** Codes on graphs, iterative decoding, graphical models, message-passing algorithms, iterative receiver design, stochastic analysis of iterative decoding, link adaptation and resource allocation algorithms in cellular networks, coding for multiterminal (wireless) networks, network coding.
- **Former Ph.D. Students :** Sami Chtourou – University : ENST, funding : 3–year fixed-term contract with France Telecom, subject : *Advanced space-time receivers for high-data rate single-carrier transmission over MIMO block-fading frequency-selective channels*, defence : March 2007 ; Florence Nadal – University : Paris XI, funding : 3–year fixed-term contract France Telecom, subject : *Channel overloading in multiuser communications*, defence : December 2006 ; Patricia Layec – University : Paris XI, funding : 3–year fixed-term contract with France Telecom, subject : *Information-theoretic bounds and practical coding schemes for MIMO communications under imperfect CSIR and partial and/or imperfect CSIT*, defence : May 2009 ; Arash Behboodi – University : Supélec, funding : 3–year scholarship from Institut Carnot, subject : *Cooperative networks with channel uncertainty*, defence : June 2012 ; Atoosa Hatefi – University : Supélec, funding : 3–year fixed-term contract with France Telecom, subject : *Distributed coding for wireless cooperative networks*, defence : October 2012 ; Baozhu Ning – University : Supélec, funding : 3–year fixed-term contract with France Telecom, subject : *Interference management and crosslayer optimization in cellular networks*, defence : December 2013 ; Mohammad-Hassan Majidi – University : Supélec, funding : Iran scholarship, subject ; *Bayesian estimation of discrete signals with local dependencies*, defense : June 2014 ;
- **Current Ph.D. Students :** Abdulaziz Mohamad – University : Supélec, funding : 3–year fixed-term contract with France Telecom, subject : *Cooperative strategies for wireless multiterminal networks*, defence : December 2015.

- **Former Post-docs :** Nicolas Gresset – Funding : 1–year fixed-term contract with France Telecom, subject : *Improved channel estimation algorithms for MIMO downlink CDMA evolution*, period : February 2005 to December 2006 ; Massinissa Lalam – Funding : 1–year fixed-term contract with France Telecom, subject : *Semi-analytical performance prediction methods for a certain class of iterative receivers*, period : January 2008 to June 2009.
- **Contract research :** Contract with France Telecom, subject : *Schémas de codage espace-temps multicouche pour canaux radiomobiles à entrées et sorties multiples et décodage itératif associé*, duration : 3 years (started in 2002, ended in 2005), ex-tax amount : 210 k€ ; Contract with France Telecom, subject : *Traitement avancé de l'information et gestion intelligente de l'interférence dans les réseaux cellulaires MIMO*, duration : 3 years (started in 2006, ended in 2010), ex-tax amount : 180 k€ ; Contract with France Telecom, subject : *Méthodes d'estimation avancées pour augmenter la capacité des réseaux cellulaires dans le sens montant*, duration : 1 year (started in December 2010, ended in March 2012), ex-tax amount : 60 k€.
- **Collaborative projects :** Network of Excellence FP6–ICT–NEWCOM, Network of Excellence FP7–ICT–NEWCOM++, Integrated Project FP7–ICT–ARTIST'4G, Celtic Project SHARING, Network of Excellence FP7–ICT–NEWCOM#
- **Expertise activities :** European Commission (EU–FP6–ICT, EU–FP7–ICT, EU–H2020–ICT) ; Research programs in Europe (Germany, Cyprus) or in other foreign countries (Russia).
- **Member of :** IEEE Information Theory Society (since 2005), IEEE Communications Society (since 2000), IEEE Signal Processing Socity (since 2013).
- **Reviewer for :** IEEE Trans. Communications, IEEE Trans. Wireless Communications, IEEE Trans. Information Theory, IEEE Trans. Signal Processing, IEEE Trans. Vehicular Technology.
- **TPC member for :** IEEE ICC'06 (Istanbul, Turkey), IEEE PIMRC'06 (Helsinki, Finland), IEEE PIMRC'07 (Athens, Greece) IEEE PIMRC'08 (Cannes, France), IEEE VTC'09 Spring (Barcelona, Spain), IEEE VTC'10 Spring (Taipei, Taiwan), IEEE VTC'11 Spring (Budapest, Hungary), IEEE GLOBECOM'12 (Anaheim, California, USA), IEEE GLOBECOM'13 (Atlanta, Georgia, USA), IEEE PIMRC'13 (London, UK), IEEE GLOBECOM'13 (Atlanta, GA, USA), IEEE PIMRC'14 (Washington, DC, USA), IEEE GLOBECOM'14 (Austin, TX, USA).
- **Participation in Ph.D. thesis or HDR evalutation committees :** H. Kanfhir (PhD, 2009), R. Zakaria (PhD, 2012), F. Lehmann (HDR, 2012), Z. Si (PhD, 2013).

Refeered publications

- **Journals papers**

1. R. Visoz, P. Tortelier, A.O. Berthet, *A generalized Viterbi algorithm for trellis coded signals transmitted through broadband wireless channels,* IEE Electron. Letters, vol. 36, no. 3, pp. 227-228, Feb. 2000.

2. P. Tortelier, A.O. Berthet, *Décodage par le treillis des codes polynomiaux : un écueil à éviter,* Annals of Telecommun., vol. 56, no. 9-10, pp 505-509, Sep. 2001.
3. A.O. Berthet, B. Sayrac Unal, R. Visoz, *On iterative decoding of serially concatenated convolutional codes over multipath Rayleigh fading channels,* IEEE J. Sel. Areas Commun., vol. 19, no. 9, pp. 1729-1743, Sep. 2001.
4. N. Nefedov, M. Pukkila, R. Visoz, A.O. Berthet, *Iterative data detection and channel estimation for advanced TDMA systems,* IEEE Trans. Commun., vol. 51, no. 2, pp. 141-144, Feb. 2003.
5. A.O. Berthet, R. Visoz, *Iterative decoding of concatenated layered space-time codes on MIMO block fading multipath AWGN channel,* IEEE Trans. Commun., vol. 51, no. 6, pp. 940-953, Jun. 2003.
6. R. Visoz, A.O. Berthet, *Iterative decoding and channel estimation for space-time BICM on MIMO block fading multipath AWGN channel,* IEEE Trans. Commun., vol. 51, no. 8, pp. 1358-1367, Aug. 2003.
7. N. Nefedov, M. Pukkila, R. Visoz and A.O. Berthet, *Iterative receiver concept for TDMA packet data systems,* European Trans. Telecommun., vol. 14, no. 5, pp. 457-469, Sep.-Oct. 2003.
8. H. Boujemaa, R. Visoz, A.O. Berthet, *Iterative low-complexity receiver for the UMTS downlink,* Annals of Telecommun., vol. 59, no. 5-6, May-Jun. 2004.
9. R. Visoz, A.O. Berthet, S. Chtourou, *A new class of iterative equalizers for space-time BICM over MIMO block fading multipath AWGN channel,* IEEE Trans. Commun., vol. 53, no. 12, pp. 2076-2091, Dec. 2005.
10. R. Visoz, A.O. Berthet, S. Chtourou, *Frequency domain block turbo-equalization for single-carrier transmission over MIMO broadband wireless channels,* IEEE Trans. Commun., vol. 54, no. 12, pp. 2144-2149, Dec. 2006.
11. R. Visoz, A.O. Berthet, N. Gresset, *Iterative receiver architectures for downlink MIMO CDMA evolution,* IEEE Trans. Wireless Commun., vol. 6, no. 8, pp. 3016-3027, Aug. 2007.
12. B. Djeumou, S. Lasaulce, A.O. Berthet, *Combining coded signals with arbitrary modulations in orthogonal relay channels,* EURASIP Research Letters in Commun. (RLC), pp. 1-4, Jul. 2008.
13. S. Chtourou, R. Visoz, A.O. Berthet, *A comparison analysis of pre-filtering methods in reduced-state trellis-based space-time turbo equalization,* Annals of Telecommun., vol. 63, no. 7-8, pp. 379-392, Aug. 2008.
14. P. Layec, R. Visoz, A.O. Berthet, *Sum discrete-rate maximization with rate and power control in layered space-time coding,* IEEE Trans. Commun., vol. 57, no. 3, pp. 789-800, Mar. 2009.
15. R. Visoz, A.O. Berthet, M. Lalam, *Semi-analytical performance prediction methods for iterative MMSE-IC multiuser MIMO joint decoding,* IEEE Trans. Commun., vol. 58, no. 9, pp. 2576-2589, Sep. 2010.

- **Conference proceedings**

1. A.O. Berthet, F. Buda, E. Lemois, J. Fang, P. Tortelier, *A comparison of SISO algorithms for iterative decoding of multidimensional product codes,* Proc. IEEE VTC'00 Spring, Tokyo, Japan, May 2000.

2. A.O. Berthet, J. Fang, P. Tortelier, *Generalized turbo product codes and their properties in iterative SISO decoding,* Proc. 2nd International Symposium on Turbo Codes, Brest, France, Sep. 2000.
3. A.O. Berthet, R. Visoz, P. Tortelier, *Sub-optimal turbo-equalization for coded 8-PSK signals over ISI channels with application to EDGE advanced mobile system,* Proc. IEEE PIMRC'00, London, UK, Sep. 2000.
4. R. Visoz, A.O. Berthet, P. Tortelier, *Joint equalization and decoding of trellis-encoded signals using the Generalized Viterbi Algorithm,* Proc. IEEE VTC'00 Fall, Boston, Massachusetts, USA, Sep. 2000.
5. A.O. Berthet, R. Visoz, B. Sayrac Unal, and P. Tortelier, *A comparison of several strategies for iteratively decoding serially concatenated convolutional codes in multipath Rayleigh fading environment,* Proc. IEEE GLOBECOM'00, San Francisco, California, USA, Dec. 2000.
6. J. Fang, A.O. Berthet, *High-order modulation with multilevel turbo coding and multistage iterative decoding for high data rate satellite transmission,* Proc. 19th AIAA ICSSC'01, Toulouse, France, Apr. 2001.
7. B. Sayrac Unal, A.O. Berthet, *Multiple channel turbo-detection,* Proc. IEEE VTC'01 Spring, Rhodes, Greece, May 2001.
8. R. Visoz, A.O. Berthet, A. Saadani, B. Penther, *Turbo equalization and incremental redundancy for advanced TDMA systems,* Proc. IEEE VTC'01 Spring, Rhodes, Greece, May 2001.
9. A.O. Berthet, B. Penther, R. Visoz, J.J. Boutros, *A new reduced-complexity turbo-detector for highly selective long-delay spread ISI channels : A solution for 4G mobile systems,* Proc. IEEE VTC'01 Spring, Rhodes, Greece, May 2001.
10. B. Sayrac Unal, A.O. Berthet, R. Visoz, *Iterative channel estimation and coded data detection for dispersive channels,* Proc. IEEE PIMRC'01, San Diego, California, USA, Sep. 2001.
11. A.O. Berthet, R. Visoz, B. Sayrac, *Iterative decoding of serially concatenated layered trellis coded modulations in the presence of intersymbol interference and noise,* Proc. IEEE GLOBECOMâĂŹ01, San Antonio, Texas, USA, Nov. 2001.
12. H. Boujemaa, R. Visoz, A.O. Berthet, *A RAKE-DFSE (Decision Feedback Sequence Estimator) equalizer for the UMTS downlink,* Proc. IEEE VTC'02 Spring, Birmingham, Alabama, USA, May 2002.
13. R. Visoz, A.O. Berthet, J.J. Boutros, *Reduced-complexity iterative decoding and channel estimation for space-time BICM over frequency-selective wireless channels,* Proc. IEEE PIMRC'02, Lisbon, Portugal, Sep. 2002.
14. A.O. Berthet, R. Visoz, J.J. Boutros, *Space-time BICM versus space-time trellis code for MIMO block fading multipath AWGN channel,* Proc. IEEE ITW'03, Paris, France, Apr. 2003.
15. S. Chtourou, R. Visoz, A.O. Berthet, *A class of low complexity iterative equalizers for space-time BICM over MIMO block fading multipath AWGN channel,* Proc. IEEE ICC'04, Paris, France, Jun. 2004.
16. F. Nadal, A.O. Berthet, H. Sari, *Further results on channel overloading using combined TDMA/CDMA with iterative interference cancellation,* Proc. IEEE PIMRC'04, Barcelona, Spain, Sep. 2004.

17. R. Visoz, A.O. Berthet, S. Chtourou, *On the performance of space-time BICM over MIMO block fading ISI Channel : Efficient MMSE-based turbo decoding,* Proc. IEE 3G'2004, London, UK, Oct. 2004.
18. A.O. Berthet, M. Pourmir, R. Visoz, *Cooperative decoding and channel estimation for superimposed space-time interleaved coded signals,* Proc. IEEE PIMRC'05, Berlin, Germany, Sep. 2005.
19. R. Visoz, A.O. Berthet, S. Chtourou, *A novel frequency domain turbo-equalizer for STBICM over MIMO ISI channel,* Proc. IEE 3G'2005, London, UK, Nov. 2005.
20. S. Chtourou, R. Visoz, A.O. Berthet, *Low complexity frequency domain turbo equalizer for STBICM over MIMO ISI channel,* Proc. IEEE ICECS'05, Gammarth, Tunisia, Dec. 2005.
21. R. Visoz, S. Chtourou, A.O. Berthet, *Turbo-equalization for single-carrier transmission over MIMO broadband wireless channel : Performance vs. complexity trade-offs,* Proc. IEEE ISCCSP'06, Marrakesh, Morocco, Mar. 2006. (invited paper)
22. R. Visoz, A.O. Berthet, N. Gresset, *Turbo space-time chip equalization and channel estimation for overloaded MIMO HSDPA,* Proc. IEEE ICC'06, Istanbul, Turkey, Jun. 2006.
23. R. Visoz, A.O. Berthet, N. Gresset, *Iterative receiver architecture for MIMO HSDPA evolution,* Proc. IEEE WIMOB'06, Montréal, Canada, Jun. 2006.
24. S. Chtourou, A.O. Berthet, R. Visoz, *Efficient doubly iterative frequency-domain turbo-equalizer for single-carrier transmission over MIMO ISI channel,* Proc. IEEE WIMOB'06, Montréal, Canada, Jun. 2006.
25. M. Pourmir, A.O. Berthet, F. Sainte-Agathe, *A new iterative equalizer based on a deterministic annealing process,* Proc. IEEE SPAWC'06, Cannes, France, Jul. 2006.
26. R. Visoz, A.O. Berthet, N. Gresset, *Iterative blind and semi-blind intracell interference cancellation for MIMO downlink CDMA,* Proc. IEEE SPAWC'06, Cannes, France, Jul. 2006.
27. P. Layec, R. Visoz, A.O. Berthet, *Achieving high spectral efficiency with adaptive layered space-time codes under rate control,* Proc. IEEE ICC'07, Glasgow, Scotland, Jun. 2007.
28. P. Layec, R. Visoz, A.O. Berthet, *Joint transmit antenna selection and rate adaptation for spatial multiplexing systems with limited feedback,* Proc. IEEE VTC'07 Fall, Baltimore, Maryland, USA, Sep.-Oct. 2007.
29. P. Layec, P. Piantanida, R. Visoz, A.O. Berthet, *Capacity bounds for MIMO multiple access channels with imperfect channel estimation,* Proc. IEEE ITW'08, Porto, Portugal, May 2008.
30. P. Layec, P. Piantanida, R. Visoz, A.O. Berthet, *Capacity of channels with multistage successive refinement of quantized feedback information via noisy links,* Proc. IEEE SPAWC'08, Recife, Pernambuco, Brazil, Jul. 2008.
31. P. Layec, R. Visoz, A.O. Berthet, *Partial waterfilling with reduced feedback for sum discrete-rate maximization in single-user MIMO,* Proc. IEEE PIMRC'08, Cannes, France, Sep. 2008.

32. P. Layec, P. Piantanida, R. Visoz, A.O. Berthet, *Transceiver design for sum-MSE optimization in MIMO MAC with imperfect channel estimation,* Proc. ASILOMAR'08, Pacific Grove, California, USA, Oct. 2008.
33. R. Visoz, A.O. Berthet, M. Lalam, *A novel fast semi-analytical performance prediction method for iterative MMSE-IC multiuser MIMO joint decoding,* Proc. IEEE GLOBECOM'08, New Orleans, Louisiana, USA, Nov./Dec. 2008.
34. R. Visoz, M. Lalam, A.O. Berthet, *Binary vs. symbolic performance prediction methods for iterative MMSE-IC multiuser MIMO joint decoding,* Proc. IEEE SPAWC'09, Perugia, Italy, Jun. 2009.
35. M. Lalam, R. Visoz, A.O. Berthet, *Fast performance prediction method of iterative MMSE-IC receivers in MU-MIMO CDMA systems,* Proc. IEEE VTC'09 Fall, Anchorage, Alaska, Sep. 2009.
36. A.O. Berthet, R. Visoz, *Sum-product decoding of layered space-time trellis coded signals over MIMO fading multipath channels,* Proc. IEEE PIMRC'09, Tokyo, Japan, Sep. 2009.
37. A. Hatefi, R. Visoz, A.O. Berthet, *Joint network-channel coding distributed coding for the full-duplex multiple access relay channel,* Proc. IEEE ICUMT'10, Moscow, Russia, Oct. 2010.
38. A. Hatefi, R. Visoz, A.O. Berthet, *Relaying functions for the multiple access relay channel,* Proc. 6th International Symposium on Turbo Codes, Brest, France, Sep. 2010.
39. A. Hatefi, R. Visoz, A.O. Berthet, *Joint channel-network turbo-coding for the non-orthogonal multiple access relay channel,* Proc. IEEE PIMRC'10, Istanbul, Turkey, Sep. 2010.
40. B. Ning, R. Visoz, A.O. Berthet, *Semi-analytical performance prediction for iterative MMSE-IC detection and semi-blind channel estimation,* Proc. IEEE VTC'11 Spring, Budapest, Hungary, May 2011.
41. A. Hatefi, R. Visoz, A.O. Berthet, *Full diversity distributed coding for the multiple access half-duplex relay channel,* Proc. International Symposium on Network Coding (NETCOD'11), Beijing, China, Jul. 2011.
42. A. Hatefi, R. Visoz, A. Berthet, *Near outage limit joint network-channel coding and decoding for the semi-orthogonal multiple-access relay channel,* Proc. International Symposium on Network Coding (NETCOD'12), Boston, MA, USA, Jul. 2012.
43. A. Hatefi, R. Visoz, A.O. Berthet, *Near outage limit joint network-channel coding and decoding for the non-orthogonal multiple-access relay channel,* Proc. IEEE PIMRC'12, Sydney, Australia, Sep. 2012.
44. B. Ning, R. Visoz, A.O. Berthet, *Extrinsic versus a posteriori probability based iterative LMMSE-IC algorithms for coded MIMO communications : Performance and analysis,* Proc. ISWCS'12, Paris, France, Aug. 2012.
45. A. Mohamad, R. Visoz, A.O. Berthet, *Outage achievable rate analysis for the non-orthogonal multiple access multiple relay channel,* Proc. IEEE WCNC'13, Shanghai, China, Apr. 2013.
46. A. Mohamad, R. Visoz, A.O. Berthet, *Outage analysis of various cooperative strategies for the multiple access multiple relay channel,* Proc. IEEE PIMRC'13, London, UK, Sep. 2013.

47. B. Ning, R. Visoz, A.O. Berthet, *Improved link adaptation for closed-loop turbo coded MIMO systems with LMMSE-IC based turbo equalization,* Proc. IEEE WI-MOB'13, Lyon, France, Oct. 2013.
48. B. Ning, R. Visoz, A.O. Berthet, *Physical layer abstraction of LMMSE-IC based turbo receivers for LTE evolution,* Proc. IEEE GLOBECOM'13, GC Workshop on Broadband Wireless Access, Atlanta, USA, Dec. 2013.
49. B. Ning, R. Visoz, A.O. Berthet, *Link adaptation for closed-loop coded MIMO systems with LMMSE-IC based turbo receivers,* Proc. ICNC'14, Honolulu, Hawai, USA, Feb. 2014.
50. A. Mohamad, R. Visoz, A.O. Berthet, *Practical joint network-channel coding schemes for orthogonal multiple-access multiple-relay channels,* Proc. IEEE GLOBECOM'14, GC Workshop on Emerging Technologies for 5G Wireless Cellular Networks (former B4G), Austin, Texas, USA, Dec. 2014.

- **Granted patents**

1. A.O. Berthet, R. Visoz, *Method and system for iteratively detecting and decoding received symbols coupled with re-estimation of the coefficients of the transmission channel,* World Patent Application, Publication Number : WO 01/89164, Issue Date : 22-11-2001, Filed on 15-05-2001 by France Telecom (also US Patent Application, Publication Number : US 6993070, Issue Date : 31-01-2006).
2. A.O. Berthet, R. Visoz, *Method and system of iterative coding/decoding of digital data streams coded by spatio-temporal combinations, in multiple transmission and reception,* World Patent Application, Publication Number : WO 02/067488, Issue Date : 29-08-2002, Filed on 14-02-2002 by France Telecom (also US Patent Application, Publication Number : US 7170948, Issue Date : 30-01-2007).
3. A.O. Berthet, R. Visoz, *Method of coding/decoding a digital data stream coded with bitwise interleaving in multiple transmission and reception in the presence of intersymbol interference and corresponding system,* World Patent Application, Publication Number : WO 02/084931, Issue Date : 24-10-2002, Filed on 11-04-2002 by France Telecom (also US Patent Application, Publication Number : US 7127009, Issue Date : 24-10-2006).
4. R. Visoz, S. Chtourou, A.O. Berthet, *Iterative decoding and equalizing method for high speed communications on multiple antenna channel during transmission and reception,* World Patent Application, Publication Number : WO 2005/ 025118, Issue Date : 17-03-2005, Filed on 06-08-2004 by France Telecom (also US Patent Application, Publication Number : US 7760828, Issue Date : 20-07-2010).
5. R. Visoz, A.O. Berthet, *Multiuser iterative detection for CDMA communications systems on a MIMO channel,* World Patent Application, Publication Number : WO 2005/114863, Issue Date : 01-12-2005, Filed on 21-04-2005 by France Telecom (also US Patent Application, Publication Number : US 7787521, Issue Date : 31-08-2010).
6. R. Visoz, A.O. Berthet, *Iterative vector equalization for CDMA communications systems on a MIMO channel,* World Patent Application, Publication Number : WO 2005/114864, Issue Date : 01-12-2005, Filed on 21-04-2005 by France Telecom (also US Patent Application, Publication Number : US 7804885, Issue Date : 28-09-2010).

7. R. Visoz, A.O. Berthet, *Disjoint iterative chip equalization and multiuser detection for CDMA communications systems on a MIMO channel,* World Patent Application, Publication Number : WO 2005/114887, Issue Date : 01-12-2005, Filed on 21-04-2005 by France Telecom (also US Patent Application, Publication Number : US 7809045, Issue Date : 05-10-2010).
8. R. Visoz, A.O. Berthet, *Emission for CDMA communications systems on a MIMO channel,* World Patent Application, Publication Number : WO 2005/114888, Issue Date : 01-12-2005, Filed on 21-04-2005 by France Telecom (also US Patent Application, Publication Number : US 7885316, Issue Date : 08-02-2011).
9. R. Visoz, N. Gresset, A.O. Berthet, *Iterative channel estimation for a MIMO channel in a CDMA network,* World Patent Application, Publication Number : WO 2007/028917, Issue Date : 16-03-3007, Filed on 25-08-2006 by France Telecom.
10. R. Visoz, P. Layec, A.O. Berthet, *Adaptive method of transmitting and receiving a signal in a multiantenna system, corresponding transmission and reception devices, computer program products and signal,* World Patent Application, Publication Number : WO 2008/031951, Issue Date : 20-03-2008, Filed on 13-09-2007 by France Telecom.

- **Patent applications**

11. R. Visoz, P. Layec, A.O. Berthet, *Method for emitting and receiving a signal in a multiantenna system, using spatial precoding, and corresponding emitter, receiver, and computer program products,* World Patent Application, Publication Number : WO 2009/047416, Issue Date : 16-04-2009, Filed on 05-09-2008 by France Telecom.
12. A. Hatefi, R. Visoz, A.O. Berthet, *Method for transmitting a digital signal in a MARC system with a full-duplex relay, and corresponding program product and relay device,* World Patent Application, Publication Number : WO 2011/033237, Issue Date : 24-03-2011, Filed on 17-09-2010 by France Telecom.
13. A. Hatefi, R. Visoz, A.O. Berthet, *Method for transmitting a digital signal in a MARC system with a half-duplex relay, and corresponding program product and relay device,* World Patent Application, Publication Number : WO 2011/033239, Issue Date : 24-03-2011, Filed on 17-09-2010 by France Telecom.
14. A. Hatefi, R. Visoz, A.O. Berthet, *Method for transmitting a digital signal in a semi-orthogonal frame system having a half-duplex relay, and correspoding program product and relay device,* World Patent Application, Publication Number : WO 2011/067534, Issue Date : 09-06-2011, Filed on 01-12-2010 by France Telecom.
15. A. Hatefi, R. Visoz, A.O. Berthet, *Method and device for relaying in a communication network,* World Patent Application, Publication Number : WO 2012/022905, Issue Date : 23-02-2012, Filed on 09.08.2011 by France Telecom.

- **Dissertations and book chapters**

1. A.O. Berthet, *Méthodes itératives appliquées au décodage efficace de combinaisons de codes en treillis,* Thèse de doctorat, UMPC, Dec. 2001.
2. A.O. Berthet, *Modèles graphiques appliqués au traitement avancé de l'information dans les systèmes de communications numériques,* Mémoire d'Habilitation à Diriger des Recherches, UMPC, Nov. 2007.

3. A. Hatefi, R. Visoz, A.O. Berthet, *Joint Network-Channel Coding for the Semi-Orthogonal MARC : Theoretical Bounds and Practical Design,*, in *Network Coding,*, John Wiley & Sons, ISBN : 978-1-84821-353-1, Apr. 2012.

- **Talks in workshops and seminars**

1. R. Visoz, A.O. Berthet, S. Chtourou *A novel frequency-domain turbo equalizer for STBICM over MIMO ISI channel,* 14th meeting WWRF, San Diego, California, USA, 7-8th July 2005.
2. A.O. Berthet, *Advanced receiver design for 4G using factor graphs,* FTW, Vienna, Austria, May 2006 (invited talk).
3. A.O. Berthet, *Iterative decoding : A unified framework using factor graphs,* Collège scientifique de France Telecom (Orange Labs), Issy-les-Moulineaux, France, June 2007 (invited talk).