

Research Contribution and Practical Applications

Articles in Refereed Publications

- [J30] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “UWB-based sensor networks for localization in mining environments”, *Ad-Hoc Networks*, Vol. 7, No. 5, pp. 987-1000, July 2009
- [J29] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Cross-layer Energy Efficiency Protocol for UWB Sensor Networks”, accepted for publication in Elsevier, May 2009
- [J28] E. INATY, **R. RAAD**, P. FORTIER, H. M. H. SHALABY, “Above the Nominal Limit Performance Evaluation of Optical Time-Wavelength Code-Division Multiple-Access Systems”, *Optical Engineering*, Vol. 48, No. 3, April 2009.
- [J27] E. INATY, **R. RAAD**, P. Fortier, H. M. H. Shalaby, “A Fair QoS-Based Resource Allocation Scheme for a Time-Slotted Optical OV-CDMA Network: A Unified Approach”, *IEEE Journal of Lightwave Technology*, Vol. 27, No. 1, pp. 2-11, January 2009
- [J26] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Large Scale Fading and Time Dispersion Parameters of UWB Channel in Underground Mines”, *International Journal of Antennas and Propagation*, April 2008.
- [J25] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF “An Investigation of UWB-Based Wireless Networks in Industrial Automation”, *International Journal of Computer Science and Network Security*, Vol. 8 No. 2, pp. 179-188, February 2008.
- [J24] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Geo-Location with Wireless Sensor Networks using Non-linear Optimization”, *International Journal of Computer Science and Network Security*, Vol. 8 No. 1, pp. 145-154, January 2008.
- [J23] **R. RAAD**, E. INATY, P. FORTIER, H. M. H. SHALABY, “Optimal resource allocation scheme in multirate overlapped optical CDMA system”, *IEEE Journal of Lightwave Technology*, vol. 25, no. 8, pp. 2044-2053, August 2007.
- [J22] **R. RAAD**, E. INATY, P. FORTIER, H. M. H. SHALABY, “Performance Comparison of S-ALOHA and R^3T Protocols for Multirate OFFH-CDMA Systems in Optical Packet Network”, *Journal of Optical Network*, Vol. 5, Issue 12, November 2006, pp. 927-936.
- [J21] **Z. HE**, P. FORTIER, S. ROY, “Highly-Parallel Decoding Architectures for Convolutional Turbo codes”, *IEEE Transactions on VLSI Systems*, Vol. 14, No. 10, pp. 1147-1151, Oct. 2006.
- [J20] **Z. HE**, P. FORTIER, S. ROY, “A Class of Irregular LDPC Codes with Low Error Floor and Low Encoding Complexity”, *IEEE Comm. Letters*, Vol. 10, No. 5, May 2006, pp. 372-374.
- [J19] **R. RAAD**, E. INATY, P. FORTIER, H. M. H. SHALABY, “Optical S-ALOHA/CDMA Systems for Multirate Applications: Architecture, Performance Evaluation, and System Stability”, *IEEE/OSA Journal on Lightwave Technology*, Vol. 24, No. 5, May 2006, pp. 1968-1977.
- [J18] **Z. HE**, P. FORTIER, S. ROY, “Design of high-performance low-density parity-check codes using interleaver approach”, *IEE Elec. Letters*, Vol. 41, No. 25, December 2005, pp. 1390-1391.
- [J17] E. INATY, H. M. H. SHALABY, P. FORTIER, “On the Cutoff Rates of a Multi-class OFFH-CDMA System”, *IEEE Trans. on Communications*, Vol. 53, No. 2, February 2005, pp. 323-334.

- [J16] **S. ROY**, P. FORTIER, “A Closed-Form Analysis of Fading Envelope Correlation Across a Wideband Basestation Array”, IEEE Transactions on Wireless Communications, Vol. 3, No. 5, September 2004, pp.1502-1507.
- [J15] **S. ROY**, P. FORTIER, “Maximal-ratio combining architectures and performance with channel estimation based on a training sequence”, IEEE Transactions on Wireless Communications, Vol. 3, No. 4, July 2004, pp. 1154-1164.
- [J14] **S. ROY**, H. T. HUYNH, P. FORTIER, “Compound Doppler Spread Effects of Subscriber Motion and Scatterer Motion”, AEÜ Int. J. Electron. Com., Vol. 57, No. 4, 2003, pp. 237-246.

Submitted Articles in Refereed Publications

- [JS2] **Z. HE**, S. ROY, P. FORTIER, HE, Z., ROY, S., FORTIER, P., “High-speed Encoders and Decoders for Low Density Parity Check Codes”, soumis aux IEEE Transactions on VLSI, novembre 2007.
- [JS1] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Characterization of the Ultra-Wideband channel in confined environments with diffracting rough surfaces”, submitted to IEEE Transactions on Antennas and Propagation, February 2007.

Refereed Conference Publications

- [C106] **I. ADJUDEANU**, J.-Y. CHOUINARD, P. FORTIER, “On the correlation between error weights and syndrome weights for belief propagation decoding of LDPC codes”, 11th Canadian Workshop on Information Theory, Ottawa, ON, Canada, May 13-15, 2009.
- [C105] **E. INATY**, **R. RAAD**, P. FORTIER, H. M. H. SHALABY “Time-Slotted Optical OV-CDMA Network Using a Fair QoS-Based Resource Management Algorithm”, IEEE Globecom 2008, New Orleans, Nov. 30 - Dec. 4, 2008.
- [C104] **T. C. QUYEN**, B. G. DUONG, P. FORTIER, P. ANH, “An Approach for Passive Radar Using a Smart Antenna System”, 2008 International Conference on Advanced Technologies for Communications, Vietnam, 6-9 October, 2008.
- [C103] **A. REFAEY-AHMED**, J.-Y. CHOUINARD, S. ROY, P. FORTIER, “A comparison between BP, log-likelihood and max log-likelihood decoding algorithms of LDPC codes based on EXIT chart and EXIT trajectories methods”, 2008 International Conference on Advanced Technologies for Communications, Vietnam, 6-9 October, 2008.
- [C102] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Optimal Design for Multi-Hops Routing in Ad-hoc and Sensor Networks”, 2nd International Conference on Wireless Communications in Underground and Confined Areas, Val-d’Or, Québec, Canada, August 27-28, 2008.
- [C101] **Z. HE**, S. ROY, P. FORTIER, “Adaptive LDPC Codes for MIMO Transceiver with Adaptive Spectral Efficiency”, 24th Biennial Symposium on Communications, Kingston, Canada, June 24-26, 2008.
- [C100] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Time-Of-Arrival Estimation for IR-UWB Systems based on Two Step Energy Detection”, 24th Biennial Symposium on Communications, Kingston, Canada, June 24-26, 2008.
- [C99] **A. REFAEY**, A. MOKHTAR, P. FORTIER, “Optimized dc-free turbo coding scheme under the map decoding algorithm”, 21st Canadian Conference on Electrical and Computer Engineering, Niagara Falls, Canada, May, 2008.
- [C98] **M. THÉRIAULT**, L. RUSCH, S. ROY, P. FORTIER, “A Semi-Analytical Method for BER Performance of Rake-Based UWB Receiver”, IEEE Wireless Communications and Networking Conference, Las Vegas, March 31–April 3, 2008.
- [C97] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “On the TOA Estimation for UWB ranging

- in Complex Confined Area”, International Symposium on Signals, Systems, and Electronics (ISSSE 2007), Montreal, Canada, July 30 – August 2, 2007.
- [C96] **Z. HE**, S. ROY, P. FORTIER, “Powerful LDPC Codes for Broadband Wireless Networks: High-performance Code Construction and High-speed Encoder/Decoder Design”, International Symposium on Signals, Systems, and Electronics (ISSSE 2007), Montreal, Canada, July 30 – August 2, 2007.
- [C95] **A. CHEHRI**, P. FORTIER, “On the Relation between Bandwidth and Robustness of UWB Channel in Complex Confined Areas”, International URSI Commission B - Electromagnetic Theory Symposium, July 26-28, 2007, Ottawa, ON, Canada.
- [C94] **R. RAAD**, E. INATY, P. FORTIER, H. M. H. SHALABY, “Hybrid Power/Overlap Allocation Scheme for a Multirate Overlapped Optical CDMA System”, ICC-2007, Glasgow, Scotland, June 24-28, 2007.
- [C93] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Eigen-analysis of UWB channel in underground mines based on information theoretic criteria”, ICC-2007, Glasgow, Scotland, June 24-28, 2007.
- [C92] **Z. HE**, S. ROY, P. FORTIER, “Lowering error floor of LDPC codes using a joint row-column decoding algorithm”, ICC-2007, Glasgow, Scotland, June 24-28, 2007.
- [C91] **Z. HE**, S. ROY, P. FORTIER, “FPGA Implementation of LDPC Decoders Based on Joint Row-Column Decoding Algorithm”, ISCAS-2007, New Orleans, May 27-30, 2007.
- [C90] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Security Monitoring Using Wireless Sensor Networks”, 2007 Communication Networks and Services Research Conference, Fredericton, May 14-17, 2007.
- [C89] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Geolocation for UWB Networks in Underground Mines”, 8th Annual IEEE Wireless and Microwave Technology (WAMI), Clearwater, FL, December 4-5, 2006.
- [C88] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “A Comparison Between Different FHSS Techniques for use in a Multiple Access Secure Wireless Sensor Network”, 8th Annual IEEE Wireless and Microwave Technology (WAMI), Clearwater, FL, December 4-5, 2006.
- [C87] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Application of Ad-hoc Sensor Networks for Localization in Underground Mines”, 8th Annual IEEE Wireless and Microwave Technology (WAMI), Clearwater, FL, December 4-5, 2006.
- [C86] **T. C. QUYEN**, P. ANH, P. FORTIER, “An Approach for BTS Antenna System for 3G and 4G”, 10th Vietnam Conf. on Radio and Electronics (REV06), Hanoi, Vietnam, November 4-7 2006.
- [C85] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Deployment of Ad-Hoc Sensor Networks in Underground Mines”, Sixth International Conference on Wireless Sensor Networks (WSN 2006), Banff, Alberta, Canada, July 3-4 2006.
- [C84] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Variance of the TOA Estimation for UWB Impulse Radio Systems”, Sixth International Conference on Wireless Networks and Emerging Technologies, (WNET 2006), Banff, Alberta, Canada, July 3-5 2006.
- [C83] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Measurement and modeling of Line-of-Sight UWB channel in underground mines”, IEEE Globecom, San Francisco, Nov. 27–Dec. 1st, 2006.
- [C82] **A. CHEHRI**, P. FORTIER, P.-M. TARDIF, “Frequency-domain analysis of UWB channel propagation in underground mines”, 64th Semi-Annual IEEE Vehicular

Technology Conference – Fall, Montreal, 25-28 September 2006.

- [C81] L. V. NINH, T. A. VU, H. T. HUYNH, P. FORTIER, “New Cyclic Prefix Based Symbol Timing and Carrier Synchronization for OFDM”, 23rd Biennial Symposium on Communications, Kingston, Ontario, May 29 –June 1st 2006, pp. 198-203.
 - [C80] A. CHEHRI, P. FORTIER, H. ANISS, P.-M. TARDIF, “UWB spatial fading and small scale characterization in underground mines”, 23rd Biennial Symposium on Communications, Kingston, Ontario, May 29 –June 1st 2006, pp. 213-218.
 - [C79] Z. HE, S. ROY, P. FORTIER, “Capacity-approaching LDPC Codes with Low Error Floors for High-speed Digital Communications”, 23rd Biennial Symposium on Communications, Kingston, Ontario, May 29 –June 1st 2006, pp.10-13.
 - [C78] Z. HE, S. ROY, P. FORTIER, “Random construction for long structured low-density parity-check codes”, ISCAS 2006, Island of Kos, Greece, May 21-24, 2006.
- Plus 5 conference papers in 2005, 6 conference papers in 2004, 3 conference papers in 2003 and 6 conference papers in 2002.

Technical Reports

- [R17] M. Q. NGUYEN, I. LAROCHE, P. FORTIER, S. ROY, “FPGA Implementation of a Baseband MIMOMC-CDMA Downlink Receiver”, Technical report presented to Defense R&D Canada – Ottawa, contract W7714-5-0942, June 2009
- [R16] M. Q. NGUYEN, P. FORTIER, S. ROY, “Simulation of MC-CDMA Systems – Final Report”, Technical report presented to Defense R&D Canada – Ottawa, contract W7714-5-0942, November 2006.
- [R15] M. Q. NGUYEN, P. FORTIER, S. ROY, “Simulation of MC-CDMA Systems”, Technical report presented to Defense R&D Canada – Ottawa, contract W7714-5-0942, September 2006.
- [R14] M.-Q. NGUYEN, P. FORTIER, S. ROY, “Simulation of OFDM Systems”, Technical report presented to Defense R&D Canada – Ottawa, contract W7714-5-0942, June 2006.
- [R13] M.-Q. NGUYEN, P. FORTIER, S. ROY, “Fundamentals of 4th Generation Multi-carrier Code Division Multiple Access (MC-CDMA)”, Technical report presented to Defense R&D Canada – Ottawa, contract W7714-5-0942, March 2006.