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LIST OF SELECTED PUBLICATIONS

Edited Special Issues and Proceedings

- [1] G. Kolumbán, guest editor. Special issue on “Intelligent Systems, INTER-ACADEMIA.” *Periodica Polytechnica, Electrical Engineering*, vol. 50, no. 3–4, 2006.
- [2] C. K. Tse, G. Kolumbán and F. C. M. Lau, guest editors. Special Issue on “Application of Chaos in Communications.” *Circuits, Systems and Signal Processing*, vol. 24, no. 5, September–October 2005.
- [3] M. P. Kennedy and G. Kolumbán, guest editors. Special issue on “Noncoherent Chaotic Communications.” *IEEE Trans. Circuits and Syst. I*, vol. 47, no. 12, December 2000.
- [4] G. Kolumbán, editor. *Proc. of the 6th International Specialist Workshop on Nonlinear Dynamics of Electronic Systems, (NDES'98)*. Technical University of Budapest, Budapest, Hungary, July 16–18, 1998.

Book Chapters

- [1] G. Kolumbán, “Phase-locked loops,” in *The Encyclopedia of RF and Microwave Engineering*, K. Chang, Ed., vol. 4, pp. 3735–3767. Wiley, New York, 2005.
- [2] G. Kolumbán and M. P. Kennedy, “Correlator-based chaotic communications: Attainable noise and multipath performance,” in *Chaos in Circuits and Systems*, G. Chen and T. Ueta, Eds. World Scientific, Series on Nonlinear Science, Series B –vol. 11, pp. 443–485, Singapore, 2002.
- [3] G. Kolumbán and M. P. Kennedy, “Overview of digital communications,” in *Chaotic Electronics in Telecommunications*, M. P. Kennedy, R. Rovatti, and G. Setti, Eds., pp. 131–149. CRC Press LLC, Florida, 2000.
- [4] M. P. Kennedy, G. Kolumbán, and Z. Jákó, “Chaotic modulation schemes,” in *Chaotic Electronics in Telecommunications*, M. P. Kennedy, R. Rovatti, and G. Setti, Eds., pp. 151–183. CRC Press LLC, Florida, 2000.
- [5] G. Kolumbán, M. P. Kennedy, and G. Kis, “Performance evaluation of FM-DCSK,” in *Chaotic Electronics in Telecommunications*, M. P. Kennedy, R. Rovatti, and G. Setti, Eds., pp. 185–220. CRC Press LLC, Florida, 2000.
- [6] G. Kolumbán, “Phase-locked loops,” in *The Encyclopedia of Electrical and Electronics Engineering*, J. G. Webster, Ed., vol. 16, pp. 158–188. Wiley, New York, 1999.

- [7] M. P. Kennedy and G. Kolumbán, “Digital communications using chaos,” in *Controlling Chaos and Bifurcations in Engineering Systems*, G. Chen, Ed., chapter 22, pp. 477–500. CRC Press LLC, Florida, 1999.
- [8] M. P. Kennedy and G. Kolumbán, “Communicating with chaos,” in *The Electrical Engineering Handbook, CRCnetBASE CD*, R. C. Dorf, Ed., chapter 5.4, 16 pages. Chapman & Hall / CRCnetBASE, CRC Press LLC, Florida, 1999.

Referred International Journal Papers

- [1] J. Julow, Zs. Kolumbán, Á. Viola, T. Major, and G. Kolumbán, “Prediction of volumetric change in the “triple ring” caused by glioma I-125 brachytherapy,” *Neuro-Oncology*, vol. 10, no. 4, pp. 583–592, August 2008.
- [2] G. Kolumbán and T. Krébesz, “UWB radio: Digital communication with chaotic and impulse wavelets,” *IEICE Trans. on Fundamentals of Electronics, Communications and Computer Sciences*, vol. E90-A, no. 10, pp. 2248–2249, October 2007.
- [3] S. K. Yong, C. C. Chong, and G. Kolumbán, “Non-coherent UWB radio for low-rate WPAN applications: A chaotic approach,” *International Journal of Wireless Information Networks*, vol. 14, no. 2, pp. 121–131, June 2007.
- [4] Y. Xia, C. K. Tse, F. C. M. Lau and G. Kolumbán, “Performance of Frequency-Modulated Differential-Chaos-Shift-Keying Communication System Over Multipath Fading Channels with Delay Spread,” *International Journal of Bifurcation and Chaos*, vol. 15, no. 12, pp. 4027–4033, December 2005.
- [5] G. Kolumbán, F. C. M. Lau and C. K. Tse, “Generalization of Waveform Communications: The Fourier Analyzer Approach,” *Circuits, Systems and Signal Processing*, vol. 24, no. 5, pp. 451–477, September–October 2005.
- [6] F. C. M. Lau and G. Kolumbán, “Performance Limit of Chaotic Digital Waveform Communication Systems: Approach of Maximizing A Posteriori Probability,” *Circuits, Systems and Signal Processing*, vol. 24, no. 5, pp. 639–655, September–October 2005.
- [7] Z. Szabó and G. Kolumbán, “How to avoid false lock in SPLL frequency synthesizers,” *IEEE Trans. on Instrumentation and Measurement*, vol. 52, no. 3, pp. 927–931, June 2003.
- [8] G. Kolumbán, M. P. Kennedy, Z. Jákó, and G. Kis, “Chaotic communications with correlator receiver: Theory and performance limit,” *Proceedings of the IEEE*, vol. 90, no. 5, pp. 711–732, May 2002, invited paper.
- [9] G. Kolumbán and M. P. Kennedy, “The role of synchronization in digital communication using chaos—Part III: Performance bounds,” *IEEE Trans. Circuits and Syst. I*, vol. 47, no. 12, pp. 1673–1683, December 2000.
- [10] G. Kolumbán, “Theoretical noise performance of correlator-based chaotic communications schemes,” *IEEE Trans. Circuits and Syst. I*, vol. 47, no. 12, pp. 1692–1701, December 2000.
- [11] M. P. Kennedy, G. Kolumbán, G. Kis, and Z. Jákó, “Performance evaluation of FM-DCSK modulation in multipath environments,” *IEEE Trans. Circuits and Syst. I*, vol. 47, no. 12, pp. 1702–1711, December 2000.

- [12] Z. Jákó, G. Kolumbán, and H. Dedieu, “On some recent developments of noise cleaning algorithms for chaotic signals,” *IEEE Trans. Circuits and Syst. I*, vol. 47, no. 9, pp. 1403–1407, September 2000.
- [13] M. P. Kennedy and G. Kolumbán, “Digital communications using chaos,” *Signal Processing*, vol. 80, no. 7, pp. 1307–1320, July 2000.
- [14] M. P. Kennedy, G. Kolumbán, and G. Kis, “Chaotic modulation for robust digital communications over multipath channels,” *International Journal of Bifurcation and Chaos*, vol. 10, no. 4, pp. 695–718, April 2000, invited paper.
- [15] B. A. Frigyik and G. Kolumbán, “Phenomenological model of the sampling phase-locked loop with false lock,” *Journal of Signal Processing*, Special Issue on Nonlinear Signal Processing, vol. 4, pp. 99–103, January 2000.
- [16] G. Kolumbán, M. P. Kennedy, and L. O. Chua, “The role of synchronization in digital communication using chaos—Part II: Chaotic modulation and chaotic synchronization,” *IEEE Trans. Circuits and Syst. I*, vol. 45, no. 11, pp. 1129–1140, November 1998.
- [17] G. Kolumbán, G. Kis, Z. Jákó, and M. P. Kennedy, “FM-DCSK: A robust modulation scheme for chaotic communications,” *IEICE Trans. Fundamentals of Electronics, Communications and Computer Sciences*, vol. E81–A, no. 9, pp. 1798–1802, September 1998.
- [18] B. Vizvári and G. Kolumbán, “Quality evaluation of random numbers generated by chaotic sampling phase-locked loops,” *IEEE Trans. Circuits and Syst. I*, vol. 45, no. 3, pp. 216–224, March 1998.
- [19] G. Kolumbán, M. P. Kennedy, and L. O. Chua, “The role of synchronization in digital communication using chaos—Part I: Fundamentals of digital communications,” *IEEE Trans. Circuits and Syst. I*, vol. 44, no. 10, pp. 927–936, October 1997.
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Patents Granted

- [1] M. P. Kennedy, G. Kolumbán, G. Kis, and Z. Jákó, “Binary digital communication system using a chaotic frequency-modulated carrier,” Irish patent number: S80913, granted on June 1, 1999.
- [2] G. Kolumbán, M. Krasovics, and G. Szarka, “Phase detector and frequency synthesizer configurations for single channel per carrier-type satellite communications systems,” Hungarian patent number: 205 505, granted on October 26, 1988.
- [3] G. Kolumbán, M. Krasovics, and G. Szarka, “Lock indicator configuration for phase-locked loops operating over very wide region of phase error,” Hungarian patent number: 204 940, granted on April 6, 1988.
- [4] G. Kolumbán, I. Sal, S. Király, G. Kósa, and K. Visegrádi, “AFC circuit configuration for quartz-stable microwave local oscillator with FM modulation capability,” Hungarian patent number: 181 811, granted on June 9, 1980.

- [5] G. Kolumbán and I. Sal, “Circuit configuration for quartz oscillator with extremely high stability and spectral purity,” Hungarian patent number: 174 247, granted on August 5, 1977.
- [6] V. Bíró, G. Kolumbán, and K. Visegrádi, “Circuit configuration for stabilizing the output power of microwave frequency multipliers,” Hungarian patent number: 174 248, granted on June 8, 1977.

Invited Tutorials and Keynote Addresses

- [1] G. Kolumbán and T. Krébesz, “LR-WPAN and UWB data communication systems: A new possible application for chaotic carriers,” in *Proc. NOMA '07*, invited talk, University de Toulouse, INSA, France, December 13–14 2007, pp. 32–35.
- [2] G. Kolumbán, “Performance bounds on chaos communications: A systematic approach to the development of a chaotic communication system,” invited tutorial at *Workshop on the Transmission of Chaotic Signals*, University of Bristol, UK, August 1–3, 2006.
- [3] G. Kolumbán, “Ultra-wideband radio: Chaotic communications versus noncoherent impulse radio,” invited tutorial at *2005 European Conference on Circuit Theory and Design*, in Proc. ECCTD'05 Tutorial Session, University College Cork, Ireland September 2, 2005.
- [4] G. Kolumbán, “The theory and implementation of a robust chaotic digital communications system,” invited talk at *2003 Microwave Symposium Workshop* organized at IEEE International Microwave Symposium, Philadelphia, USA, June 9, 2003.
- [5] G. Kolumbán, “The theory and implementation of a robust chaotic digital communications system,” invited talk at *Winter School 2002* organized by the UCSD/UCLA/Stanford ARO MURI Program in Chaotic Communications, University of California, San Diego, USA, January 13–16, 2002.
- [6] M. P. Kennedy and G. Kolumbán, “Chaotic modulations: from BCSK to FM-DCSK,” presymposium tutorial at *2000 IEEE International Symposium on Circuits and Systems*, Geneva, Switzerland, May 28–31, 2000. Online: <<http://www.mit.bme.hu/research/chaos/tutorials/modulation>>.
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