Howard Cam Luong (PhD, UC Berkeley, 1994)



Professor, <u>ECE, HKUST</u>,

<u>IEEE Fellow</u>

Faculty-In-Charge, <u>WIreless Communications</u>

Integrated Circuits Lab (WIC2L), EEE, HKUST

Electrical & Electronic Engineering Department
Hong Kong University of Science & Technology
Clear Water Bay, Kowloon, Hong Kong

Phone: 011-852-2358-8514 Fax: 011-852-2358-1485 E-Mail: <u>eeluong@ee.ust.hk</u> Office: 2453 (Lifts 25-26)

RESEARCH INTERESTS

- RF Integrated Circuits and Systems for Wireless Communication
- UHF RFID Readers and Passive Tags
- CMOS mm-Wave and Sub-THz Transceivers and Building Blocks
- Ultra-Low-Power Transceivers for Biomedical and Implantable Applications

BIOGRAPHY

PUBLICATION

BIOGRAPHY

<u>Howard Luong</u> received his BS, MS, and PhD degrees in Electrical Engineering and Computer Sciences (EECS) from <u>University of California at Berkeley</u> in 1988, 1990, and 1994, respectively. Since September 1994, he has joined <u>the ECE faculty</u> at the <u>Hong Kong University of Science and Technology</u> where he is currently a professor.

Professor Luong's research interests are in RF/mm-Wave/sub-THz and analog integrated circuits and systems for wireless, portable, and bio-medical applications. He was a co-author of the three technical books entitled "Design Techniques for Transformer-Based VCOs and Frequency Dividers" by Springer in November 2015, "Low-Voltage RF CMOS Frequency Synthesizers" by Cambridge University Press in August 2004, and "Design of Low-Voltage CMOS Switched-Opamp Switched-Capacitor Systems" by Kluwer Academic Publishers in July 2003.

Professor Luong is an <u>IEEE Fellow</u>. He is currently serving as an Associate Editor of <u>IEEE Solid-State Circuits Letters (SSCL)</u> and <u>IEEE Virtual Journal on RFIC</u> and a technical program committee member of <u>IEEE International Solid-State Circuits Conference (ISSCC)</u>. He was an <u>IEEE Solid-State Circuits Society Distinguished Lecturer</u> from 2012 to 2014 and an Associate Editor for <u>IEEE Transactions on Circuits and Systems I (TCAS-I)</u> and <u>TCAS-II</u> from 2010 to 2012 and from 1999 to 2002, respectively.

Professor Luong is serving on the Engineering Panel of Hong Kong Research Grants Council (RGC), the Technology Review Panel for Hong Kong ASTRI R&D Centre, and the Disciplinary Tribunal Panel (Electricity) of Hong Kong Government.

ANALOG RESEARCH LAB'S PUBLICATION

- Journal Papers
- Conference Papers
- Patents
- Books

JOURNAL PAPERS

- B. Jiang, and H. C. Luong, "A 7.9-GHz Transformer-Feedback Quadrature VCO with a Noise- Shifting Coupling Network," *IEEE Journal of Solid-State Circuits*, October 2017
- A. Li, C. Yue, L. Wu, X. Chen, and H. C. Luong, "A Spur-and-Phase-Noise-Filtering Technique for Inductor-less Fractional-N Injection-Locked PLLs," *IEEE Journal of Solid-State Circuits*, August 2017
- S. Zheng, and H. C. Luong, "A WCDMA/WLAN Digital Polar Transmitter with Low-Noise ADPLL, Wideband PM/AM Modulator, and Linearized PA," *IEEE Journal of Solid-State Circuits*, July 2015
- A. Li, S. Zheng, J. Yin, X. Luo, and H. C. Luong, "A 21GHz-48GHz Sub-Harmonic Injection-Locked Fractional-N Frequency Synthesizer for Multi-Band Point-to-Point Backhaul Communications," *IEEE Journal of Solid-State Circuits (JSSC)*, August 2014
- Y. Chao, and H. C. Luong, "Analysis and Design of a 2.9mW 53.4GHz-79.4GHz Frequency-Tracking Injection-Locked Frequency Divider in 65nm CMOS," *IEEE Journal* of Solid-State Circuits (JSSC), October 2013
- L. Wu, A. Li, and H. C. Luong, "A 4-Path 42.8-to-49.5GHz LO Generation with Automatic Phase Tuning for 60GHz Phased-Array Receivers," *IEEE Journal of Solid-State Circuits* (*JSSC*), October 2013
- J. Yin, and H. C. Luong, "A 57.5-90.1GHz Magnetically-Tuned Multi-Mode CMOS VCO," *IEEE Journal of Solid-State Circuits (JSSC)*, August 2013
- S. Zheng and H. C. Luong, "A CMOS WCDMA/WLAN Digital Polar Transmitter with AM Replica Feedback Linearization," *IEEE Journal of Solid-State Circuits (JSSC)*, July 2013
- S. Rong, and H. C. Luong, "Design and Analysis of Varactor-Less Interpolative-Phase-Tuning Millimeter-Wave LC Oscillators with Multiphase Outputs," *IEEE Journal of Solid-State Circuits (JSSC)*, August 2011, pp. 1810-1819
- J. Yin, J. Yi, M. Law, M. Ling, P. Lee, B. Ng, B. Gao, H. C. Luong, A. Bermak, M. Chan, W. H. Ki, C. Y. Tsui, M. Yuen, "A System-on-Chip EPC Gen-2 Passive UHF RFID Tag with Embedded Temperature Sensor," *IEEE Journal of Solid-State Circuits (JSSC)*, November 2010, pp. 2404 2420
- M. K. Law, A. Bermak, H. C. Luong, "An 119nW CMOS Temperature Sensor for RFID Food Monitoring Application," *IEEE Journal of Solid-State Circuits (JSSC)*, June 2010
- H. Zheng, S. Lou, T. Chan, C. Shen, D. Lu, and H. C. Luong, "A 3.1-8.0 GHz MB-OFDM UWB Transceiver in 0.18-μm CMOS," *IEEE Journal of Solid-State Circuits (JSSC)*, February 2009
- S. Lou, and H. C. Luong, "A Linearization Technique for RF Receiver Front-End Using Second-Order-Intermodulation Injection," *IEEE Journal of Solid-State Circuits (JSSC)*, November 2008
- T. Zheng, and H. C. Luong, "Ultra-Low-Voltage 20-GHz Dividers Using Transformer Feedback in 0.18-μm CMOS Process," *IEEE Journal of Solid-State Circuits (JSSC)*, October 2008

- E. Wang, S. Lou, K. Chui, S. Rong, C. F. Lok, H. Zheng, H. T. Chan, S. W. Man, H. C. Luong, V. K. Lau, and C. Y. Tsui, "A Single-Chip UHF RFID Reader in 0.18-μm CMOS," *IEEE Journal of Solid-State Circuits (JSSC)*, August 2008
- L. Leung, D. Lau, S. Lou, A. Ng, R. Wang, G. Wong, P. Wu, H. Zheng, V. Cheung, and H. C. Luong "A 1-V 86-mW-RX 53-mW-TX Single-Chip CMOS Transceiver for WLAN IEEE 802.11a," *IEEE Journal of Solid-State Circuits (JSSC)*, September 2007
- A. Ng, and H. C. Luong, "A 1V 17GHz 5mW Quadrature CMOS VCO Using Transformer Coupling," *IEEE Journal of Solid-State Circuits (JSSC)*, September 2007
- H. Zheng, and H. C. Luong, "A 1.5-V 3.1GHz-8GHz CMOS Synthesizer for 9-Band MB-OFDM UWB Transceivers," *IEEE Journal of Solid-State Circuits (JSSC)*, June 2007
- P. Wu, V. Cheung, and H. C. Luong, "A 1-V 100MS/s 8-bit CMOS Switched-Opamp Pipelined ADC Using Loading-Free Architecture," *IEEE Journal of Solid-State Circuits* (*JSSC*), April 2007
- A. Ng, G. Leung, K. Kwok, L. Leung, and H. C. Luong, "A 1-V 24-GHz 17.5-mW Phase-Locked Loop in a 0.18-um CMOS Process," *IEEE Journal of Solid-State Circuits (JSSC)*, June 2006
- K. Ng, and H. C. Luong, "A 28-MHz Wideband Switched-Capacitor Bandpass Filter with Transmission Zeros for High Attenuation," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 40, pp. 785-790, March 2005
- K. Kwok, and H. C. Luong, "Ultra-Low-Voltage High-Performance VCO Using Transformer Feedback," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 40, pp. 652-660, March 2005
- K. Ng, V. Cheung, H. C. Luong, "A 44-MHz Wideband Switched-Capacitor Bandpass Filter Using Double-Sampling Pseudo-Two-Path Techniques," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 40, pp. 781-784, March 2005
- G. Leung, and H. C. Luong, "A 1-V 5.2-GHz 27.5-mW Fully-Integrated CMOS WLAN Synthesizer," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 39, pp. 1873-1882, November 2004
- J. Wong, V. Cheung, H. C. Luong, "A 1-V 2.5-mW 5.2-GHz Frequency Divider in a 0.35-um CMOS Process," *IEEE Journal of Solid-State Circuits (JSSC)*, pp. 1643-1648, October 2003.
- V. S. L. Cheung, H. C. Luong, M. Chan, and W. H. Ki, "A 1-V 3.5-mW CMOS Switched-Opamp Quadrature IF Circuitry for Bluetooth Receivers," *IEEE Journal of Solid-State Circuits (JSSC)*, pp. 805-816, May 2003.
- V. S. L. Cheung, H. C. Luong, and W. H. Ki, "A 1-V 10.7-MHz Switched-Opamp Bandpass Sigma Delta Modulator Using Double-Sampling Finite-Gain-Compensation Technique," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 37, No. 10, pp. 1215-1225, October 2002.
- T. Kan, G. Leung, and H. C. Luong, "A 2-V 1.8-GHz Fully-Integrated CMOS Dual-Loop Frequency Synthesizer," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 37, No. 8, pp. 1012-1020, August 2002.
- C. B. Guo, C. W. Lo, T. Choi, I. Hsu, D. Leung, T. Kan, A. Chan, H. C. Luong, "A 900-MHz Fully-Integrated CMOS Wireless Receiver with On-Chip RF and IF Filters and 79-dB Image Rejection," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 37, No. 8, pp. 1084-1089, August 2002.
- C. W. Lo and H. C. Luong, "A 1.5-V 900-MHz Monolithic CMOS Fast-Switching Frequency Synthesizer for Wireless Applications," *IEEE Journal of Solid-State Circuits* (*JSSC*), Vol. 37, No. 4, pp. 459-70, April 2002.
- W. Yan and H. C. Luong, "A 2-V 900-MHz Monolithic CMOS Dual-Loop Frequency Synthesizer for GSM Wireless Receivers," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 36, No. 2, pp. 204-216, February 2001.
- V. S. L. Cheung, H. C. Luong, and W. H. Ki, "A 1-V Switched-Opamp Switched-Capacitor Pseudo-2-Path Filter," *IEEE Journal of Solid-State Circuits (JSSC)*, Vol. 36, No. 1, pp. 14-22, January 2001.

CONFERENCE PAPERS

- Z. Huang, and H. C. Luong, "An 82GHz-to-108GHz -181dB-FOMT ADPLL Employing a DCO with Split Transformer and Dual-Path Switched-Capacitor Ladder and a Clock-Skew-Sampling Sigma-Delta TDC," *IEEE International Solid-State Circuit Conference* (*ISSCC*), Feb. 2018
- X. Liu, and H. C. Luong, "A 59-to-276 GHz CMOS Signal Generation for Rotational Spectroscopy," *IEEE Radio-Frequency Integrated Circuits Symposium (RFIC)*, June 2017
- X. Liu, H. Zhang, M. Zhao, X. Chen, P. Mok, and H. C. Luong, "A 2.4V 23.9dBm 35.7%
 -PAE -32.1dBc-ACLR LTE-20MHz Envelope-Shaping-and-Tracking System with a Multi-Loop-Controlled AC-Coupling Supply Modulator and a Mode-Switching PA," *IEEE International Solid-State Circuit Conference (ISSCC)*, Feb. 2017
- A. Li, Y. Chao, X. Chen, L. Wu, and H.C. Luong, "An Inductor-less Fractional-N Injection-Locked PLL with a Spur-and-Phase-Noise Filtering Technique," *IEEE Symposium on VLSI Circuits (VLSI)*, June 2016
- Z. Huang, L. Li, and H. C. Luong, "A 4.2us-Settling-Time 3rd-Order 2.1-GHz Phase-Noise-Rejection PLL Using A Cascaded Time-Amplified Clock-Skew Sub-Sampling DLL," *IEEE International Solid-State Circuit Conference (ISSCC)*, Feb. 2016
- Y. Chao, L. Li, and H. C. Luong, "An 86GHz-94.3GHz Transmitter with 15.3dBm Output Power and 9.6% Efficiency in 65nm CMOS," *IEEE International Solid-State Circuit Conference (ISSCC)*, Feb. 2016
- Z. Huang, H. C. Luong, "A Dithering-Less 54.79-to-63.16GHz DCO with 4-Hz Frequency Resolution Using Exponentially-Scaling C-2C switched-capacitor Ladder," *IEEE* Symposium on VLSI Circuits (VLSI), June 2015
- Z. Huang, H. C. Luong, B. Chi, Z. Wang, and H. Jia, "A 70.5GHz-to-85.5GHz 65nm Phase-Locked Loop with Passive Scaling of Loop Filter," *IEEE International Solid-State Circuit Conference (ISSCC)*, Feb. 2015
- S. Zheng and H. C. Luong, "A WCDMA/WLAN Digital Polar Transmitter with Low-Noise ADPLL, Wide-Band PM/AM Modulator, and Linearized PA in 65nm CMOS," *European Solid-State Circuits Conference (ESSCIRC)*, September 2014
- J. Yin, and H. C. Luong, "A 0.37-to-46.5GHz Frequency Synthesizer for Software-Defined Radios in 65nm CMOS Process," *IEEE Symposium on VLSI Circuits (VLSI)*, June 2014
- Y. Chao, Z. Hong, and H. C. Luong, "A 0.6/1.2-V 14.1-mW 96.8GHz-to-108.5GHz Transformer-Based PLL with Embedded Phase Shifter in 65-nm CMOS," *IEEE Radio-Frequency Integrated Circuits (RFIC)*, June 2014
- A. Li, S. Zheng, J. Yin, H. C. Luong, and X. Lou, "A CMOS 21-48GHz Fractional-N Synthesizer Employing Ultra-Wideband Injection-Locked Frequency Multipliers," *IEEE Custom Integrated Circuits Conference (CICC)*, September 2013
- Y. Chao and H. C. Luong, "A Transformer-Based Dual-Band VCO and ILFDs for Wide-Band mm-Wave LO Generation," *IEEE Custom Integrated Circuits Conference (CICC)*, September 2013
- W. L. Ng, S. Zheng, H. Leung, Y. Chao, and H. C. Luong, "A 0.9GHz-5.8GHz SDR Receiver Front-End with Transformer-Based Current-Gain Boosting and 81-dB 3rd-Order-Harmonic Rejection Ratio," *European Solid-State Circuits Conference (ESSCIRC)*, September 2013
- L. Wu, T. Leung, A. Li, Z. Hong, Y. Qin, and H. C. Luong, "A 4-Element 60-GHz CMOS Phased-Array Receiver with Transformer-Based Hybrid-Mode Mixing and Closed-Loop Beam-forming Calibration," *IEEE Symposium on VLSI Circuits (VLSI)*, June 2013

- C. Yue and H. C. Luong, "A 440-uW 60-GHz Injection-Locked Frequency Divider in 65nm CMOS," *IEEE Radio-Frequency Integrated Circuits (RFIC)*, June 2013, to appear
- J. Yin and H. C. Luong, "A 57.5-to-90.1GHz Magnetically-Tuned Multi-Mode CMOS VCO," *IEEE Custom Integrated Circuits Conference (CICC)*, September 2012
- L. Wu and H. C. Luong, "A 0.6V 2.2mW 58-to-73GHz Divide-by-4 Injection-Locked Frequency Divider," *IEEE Custom Integrated Circuits Conference (CICC)*, September 2012
- S. Zheng and H. C. Luong, "A WCDMA/WLAN Digital Polar Transmitter with AM Replica Feedback Linearization in 65nm CMOS," *European Solid-State Circuits Conference (ESSCIRC)*, September 2012
- A. Ng, S. Zheng, and H. C. Luong, "A 4.1GHz-6.5GHz All-Digital Frequency Synthesizer with a 2nd-Order Noise-Shaping TDC and a Transformer-Coupled QVCO," *European Solid-State Circuits Conference (ESSCIRC)*, September 2012
- L. Wu and H. C. Luong, "A 49-to-62GHz CMOS Quadrature VCO with Bimodal Enhanced Magnetic Tuning," *European Solid-State Circuits Conference (ESSCIRC)*, September 2012
- J. Yin and H. C. Luong, "A 0.8V 1.9mW 53.7-to-72.0GHz Self-Frequency-Tracking Injection-Locked Frequency Divider," *IEEE Radio-Frequency Integrated Circuits* (*RFIC*), June 2012
- S. Zheng and H. C. Luong, "A 4.1-to-6.5GHz Transformer-Coupled CMOS Quadrature Digitally-Controlled Oscillator with Quantization Noise Suppression," *IEEE Radio-Frequency Integrated Circuits (RFIC)*, June 2012
- C. Yue and H. C. Luong, "A 2.9mW 53.4-79.4GHz Frequency-Tracking Injection-Locked Frequency Divider with 39.2% Locking Range in 65nm CMOS," *IEEE Radio-Frequency Integrated Circuits (RFIC)*, June 2012
- A. Li and H. C. Luong, "A Reconfigurable 4.7-6.6GHz and 8.5-10.7GHz Concurrent and Dual-Band Oscillator in 65nm CMOS," *IEEE Radio-Frequency Integrated Circuits* (*RFIC*), June 2012
- T. Leung and H. C. Luong, "A 1.2-6.6GHz LNA Using Transformer Feedback for Wideband Input Matching and Noise Cancellation in 0.13μm CMOS," *IEEE Radio-Frequency Integrated Circuits (RFIC)*, June 2012
- A. Ng and H. C. Luong, "Transformer-Based Current-Gain-Boosted Technique for Dual-Band and Wide-Band Receiver Front-Ends," *IEEE Radio-Frequency Integrated Circuits* (*RFIC*), June 2012
- L. Wu, A. Li, and H. C. Luong, "A 4-Path 42.8-to-49.5GHz LO Generation with Automatic Phase Tuning for 60GHz Phased-Array Receivers," *IEEE International Solid-State Circuit Conference 2012 (ISSCC)*, February 2012, to appear
- S. Rong, and H. C. Luong, "A 0.05-to-10GHz 19-to-22GHz and 38-to-44GHz SDR Frequency Synthesizer in in 0.13um CMOS," *IEEE International Solid-State Circuit Conference 2011 (ISSCC)*, February 2011
- S. Rong, and H. C. Luong, "A 0.8V 57GHz-to-72GHz Differential-Input Frequency Divider with Locking Range Optimization in 0.13um CMOS," *IEEE Asian Solid-State Circuits Conference*, Beijing, China, November 2010
- S. Rong, and H. C. Luong, "V-Band Varactor-less Interpolative-Phase-Tuning Oscillators with Multiphase Outputs," *2010 IEEE Custom Integrated Circuits Conference (CICC)*, San Jose, USA, September 2010
- L. Wu, A. Ng, L. Leung, and H. C. Luong, "A 24-GHz and 60-GHzDual-Band Standing-Wave VCO in 0.13-μm CMOS Process," *Radio-Frequency Integrated Circuits (RFIC)*, June 2010
- H. C. Luong, "Single-Chip UWB Transceiver in 0.18-μm CMOS Process," CMOS Emerging Technology Workshop, May 2010 (Invited Talk)

- J. Yin, J. Yi, M. Law, M. Ling, P. Lee, B. Ng, B. Gao, H. C. Luong, A. Bermak, M. Chan, W. H. Ki, C. Y. Tsui, M. Yuen, "A System-on-Chip EPC Gen-2 Passive UHF RFID Tag with Embedded Temperature Sensor," *IEEE International Solid-State Circuit Conference* 2010 (ISSCC), San Francisco, February 2010
- A. Ng, S. Rong, T. Zheng, and H. C. Luong, "Low-Voltage Transformer-Feedback CMOS VCOs and Dividers," *VLSI-DAT*, Taiwan, April 2009 (Invited Talk)
- S. Rong, A. Ng, and H. C. Luong, "0.9mW 7GHz and 1.6mW 60GHz Frequency Dividers with Locking-Range Enhancement in 0.13um CMOS," *IEEE International Solid-State Circuit Conference 2009 (ISSCC)*, San Francisco, USA, February 2009
- S. Lou, and H. C. Luong, "A 0.8GHz-10.6GHz SDR Low-Noise Amplifier in 0.13-um CMOS," 2008 IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, September 2008
- H. C. Luong, "CMOS RF Integrated Circuits and Systems for Wireless Communication,"
 Asian-Pacific Conference on High-Speed Circuit Design, Taiwan, July 2008 (Keynote Talk)
- S. Lou, and H. C. Luong, "A Linearization Technique for RF Receiver Front-End Using Second-Order-Intermodulation Injection," *IEEE Asian Solid-State Circuits Conference* 2007, Korea, November 2007 (A-SSCC/ISSCC Student Design Contest Winner)
- S. Rong and H. C. Luong, "A 1.7mW 25GHz Transformer-Feedback divide-by-3 Frequency Divider with Quadrature Outputs," *IEEE Asian Solid-State Circuits Conference 2007*, Korea, November 2007
- C. Shen and H. C. Luong, "A 0.55-V 25-GHz Transformer-Coupled Frequency Divider with Quadrature Outputs," *IEEE Asian Solid-State Circuits Conference 2007*, Korea, November 2007
- T. F. Chan and H. C. Luong, "A 0.8-V CMOS Quadrature LC VCO Using Capacitive Coupling," *IEEE Asian Solid-State Circuits Conference 2007*, Korea, November 2007
- T. F. Chan and H. C. Luong, "A CMOS Linear-in-dB High-Linearity Variable- Gain Amplifier for UWB Receivers," *IEEE Asian Solid-State Circuits Conference 2007*, Korea, November 2007
- H. Zheng, S. Lou, T. Chan, C. Shen, D. Lu, and H. C. Luong, "A 3.1-8.0 GHz MB-OFDM UWB Transceiver in 0.18-μm CMOS," 2007 IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, September 2007
- E. Wang, S. Lou, K. Chui, S. Rong, C. F. Lok, H. Zheng, H. T. Chan, S. W. Man, H. C. Luong, V. K. Lau, and C. Y. Tsui, "A Single-Chip UHF RFID Reader in 0.18-µm CMOS," 2007 IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, September 2007 (AMD/CICC Student Scholarship Award Winner and CICC Featured Publicity Paper)
- S. Rong and H. C. Luong, "1V 4GHz-and-10GHz Transformer-Based Dual-Band Quadrature VCO in 0.18-μm CMOS," 2007 IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, September 2007
- H. Zheng and H. C. Luong, "A 0.5-V 16GHz-20GHz Differential Injection-Locked Divider in 0.18-µm CMOS Process," 2007 IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, September 2007
- L. Leung and H. C. Luong, "A 7-μW Clock Generator in 0.18-um CMOS for Passive UHF RFID EPC G2 Tags," 2007 European Solid-State Circuits Conference (ESSCIRC), Germany, September 2007
- S. Lou, H. Zheng and H. C. Luong, "A 1.5-V CMOS Receiver Front-End for 9-Band MB-OFDM UWB System," 2006 IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, September 2006
- H. Zheng and H. C. Luong, "A 0.9-V Double-Balanced Quadrature-Input Quadrature-Output Frequency Divider," **2006 IEEE Custom Integrated Circuits Conference (CICC)**, San Jose, USA, September 2006

- L. Leung, T. Zheng, S. Lou, A. Ng, D. Lau, R. Wang, P. Wu, V. Cheung, G. Wong, and H. C. Luong, "A 1V Low-Power Single-Chip CMOS WLAN IEEE 802.11a Transceiver," 2006 European Solid-State Circuits Conference (ESSCIRC), Switzerland, September 2006
- E. Wang and H. C. Luong, "A 0.8-V 4.9-mW CMOS Fractional-N Frequency Synthesizer for RFID Application," **2006 European Solid-State Circuits Conference (ESSCIRC)**, Switzerland, September 2006
- T. Zheng, A. Ng, and H. C. Luong, "A 1.5V 9-Band CMOS Synthesizer for MB-OFDM UWB Transceivers," **2006 Symposium on VLSI Circuits**, Hawaii, USA, June 2006.
- P. Wu, V. Cheung, and H. C. Luong, "A 1-V 100MS/s 8-bit CMOS Switched-Opamp Pipelined ADC Using Loading-Free Architecture," **2006 Symposium on VLSI Circuits**, Hawaii, USA, June 2006.
- A. Ng, and H. C. Luong, "A 1V 17GHz 5mW Quadrature CMOS VCO Using Transformer Coupling," *IEEE International Solid-State Circuit Conference 2006 (ISSCC)*, San Francisco, USA, February 2006.
- T. Zheng, S. Lou, L. Leung, H. C. Luong, "RF System Architectures and Circuit Techniques for Wideband Transceivers," *IEEE Radio-Frequency Integration Technology 2005* (*RFIT*), Singapore, December 2005, (Invited Paper)
- R. Wang, D. Lau, S. Lou, E. Wang, and H. C. Luong, "A 1.8-V 531-mW Single-Chip Single-Conversion CMOS Cable TV Tuner," 2005 Asian Solid-State Circuit Conference (ASSCC), Taiwan, November 2005 (ASSCC/ISSCC Student Design Contest Winner)
- L. Leung, and H. C. Luong, "A 1V Dual-Band VCO Using an Integrated Variable Inductor," 2005 Asian Solid-State Circuit Conference (ASSCC), Taiwan, November 2005
- D. Lau and H. C. Luong, "A 1.8-V 35-mW Wide-Band CMOS Synthesizer for Cable Tuner Applications," 2005 Asian Solid-State Circuit Conference (ASSCC), Taiwan, November 2005
- S. Lou and H. C. Luong, "A Wideband CMOS Variable-Gain Low-Noise Amplifier for Cable TV Tuners," 2005 Asian Solid-State Circuit Conference (ASSCC), Taiwan, November 2005
- S. Ping and H. C. Luong, "A 1.0-V 15.6-dBm 39.5%-PAE CMOS Class-E Power Amplifier with On-Chip Transformer for Q Enhancement," 2005 Asian Solid-State Circuit Conference (ASSCC), Taiwan, November 2005
- L. Leung, and H. C. Luong, "A 1-V 9.7-mW CMOS Frequency Synthesizer for WLAN 802.11a Transceivers," *2005 Symposium on VLSI Circuits*, Tokyo, Japan, June 2005
- A. Ng, G. Leung, K. C. Kwok, L. Leung, and H. C. Luong, "A 1-V 24-GHz 17.5-mW Phase-Locked Loop in a 0.18-um CMOS Process," *IEEE International Solid-State Circuit Conference 2005 (ISSCC)*, San Francisco, USA, February 2005.
- V. Cheung, and H. C. Luong, "A 3.3-V 240-MS/s CMOS Bandpass Sigma-Delta Modulator Using a Fast-Settling Double-Sampling SC Filter," *2004 Symposium on VLSI Circuits*, Hawaii, USA, June 2004
- K. C. Kwok, and H. C. Luong, "A 0.35-V 1.46-mW Low-Phase-Noise Oscillator with Transformer Feedback in Standard 0.18-um CMOS Process," *IEEE Custom Integrated Circuits Conference 2003 (CICC)*, San Jose, USA, September 2003.
- K. Ng, and H. C. Luong, "A 28-MHz Wide-Band Switched-Capacitor Bandpass Filter with High Attenuation," *IEEE Custom Integrated Circuits Conference 2003 (CICC)*, San Jose, USA, September 2003.
- V. Cheung, and H. C. Luong, "A 1-V 10-mW Monolithic Bluetooth Receiver in a 0.35-um CMOS Process," *2003 European Solid-State Circuits Conference (ESSCIRC)*, Estoril, Portugal, September 2003.
- G. Leung, and H. C. Luong, "A 1-V 5.2-GHz 27.5-mW Fully-Integrated CMOS WLAN Synthesizer," *2003 European Solid-State Circuits Conference (ESSCIRC)*, Estoril, Portugal, September 2003.
- G. Leung, and H. C. Luong, "A 1-V 13-mW 2.5-GHz Double-Rate Phase-Locked Loop with Phase Alignment for Zero Delay," **2003 European Solid-State Circuits Conference** (ESSCIRC), Estoril, Portugal, September 2003.

- V. Cheung, and H. C. Luong, "A 0.9-V 0.5-uW CMOS Single-Switched-Opamp-Based Signal-Conditioning System for Pacemaker Applications," *IEEE International Solid-State Circuit Conference 2003 (ISSCC)*, San Francisco, USA, February 2003.
- J. Wong, V. Cheung, H. C. Luong, "A 1-V 2.5-mW 5.2-GHz Frequency Divider in a 0.35-um CMOS Process," *2002 Symposium on VLSI Circuits*, Hawaii, USA, June 2002.
- V. Cheung, H. C. Luong, M. Chan, W. H. Ki, "A 1-V 3.5-mW CMOS Switched-Opamp Quadrature IF Circuitry for Bluetooth Receivers," *2002 Symposium on VLSI Circuits*, Hawaii, USA, June 2002.
- J. Wong, H. C. Luong, "A 1.5-V 4-GHz Dynamic-Loading Regenerative Frequency Doubler in a 0.35-um CMOS Process," *IEEE Radio-Frequency Integrated Circuits Conference (RFIC)*, Washington, USA, May 2002.
- C. B. Guo, C. W. Lo, T. Choi, I. Hsu, D. Leung, T. Kan, A. Chan, H. C. Luong, "A 900-MHz Fully-Integrated CMOS Wireless Receiver with On-Chip RF and IF Filters and 79-dB Image Rejection," *Symposium on VLSI Circuits*, Kyoto, Japan, June 2001, pp.241-4.
- C. B. Guo, A. Chan, and H. C. Luong, "A 2-V 950-MHz LNA with Notch Filter for Wireless Receivers," *IEEE Radio-Frequency Integrated-Circuit Symposium*, 2001 (RFIC), Arizona, USA, May 2001, pp. 79-82.
- V. S. L. Cheung, H. C. Luong, and W. H. Ki, "A 1-V 10.7-MHz Switched-Opamp Bandpass Sigma Delta Modulator Using Double-Sampling Finite-Gain-Compensation Technique" *IEEE International Solid-State Circuit Conference 2001 (ISSCC)*, San Francisco, USA, February 2001, pp. 52-53, 428.(Listed among the 2001 ISSCC Papers with the Most Significant Results)
- W. Yan and H. C. Luong, "A 2-V 900-MHz Monolithic CMOS Dual-Loop Frequency Synthesizer for GSM Wireless Receivers," *European Solid-State Circuits Conference (ESSCIRC)*, Stockholm, Sweden, September 2000.
- T. Kan and H. C. Luong, "A 2-V 1.8-GHz Fully-Integrated CMOS Dual-Loop Frequency Synthesizer," *Symposium on VLSI Circuits 2000*, Hawaii, USA, June 2000, pp. 234-237.
- C. W. Lo and H. C. Luong, "A 1.5-V 900-MHz Monolithic CMOS Fast-Switching Frequency Synthesizer for Wireless Applications," *Symposium on VLSI Circuits* 2000, Hawaii, USA, June 2000, pp. 238-241.
- V. S. L. Cheung, H. C. Luong, and W. H. Ki, "A 1-V Switched-Opamp Switched-Capacitor Pseudo-2-Path Filter," *IEEE International Solid-State Circuit Conference*, USA, pp. 154-155, 453, February 2000.

Back To Top

PATENTS

- Z. Huang and H. C. Luong, "Exponentially Scaled Switched Capacitors," <u>US Patent Application</u>, <u>Serial No. TTC.PA.0942</u>, filed in June 2016
- A. Li, H. Luong, X. Lou, "Wideband Injection-Locked Frequency Generation Circuits Using High-Order LC Tanks," <u>US Patent Application</u>, <u>Serial No. PCT/CN2013/08423</u>, filed in June 2013
- S. Rong and H. C. Luong, "Method and Apparatus for Tuning Frequency of LC-Oscillators Based on Phase-Tuning Technique," *Taiwanese Patent*, *1528706*, granted in April 2016
- M. Law, A. Bermak, and H. C. Luong, "Low Voltage Low Power CMOS Temperature Sensor Circuit," <u>US Patent, No. 8,931,953</u>, granted in January 2015
- M. Law, A. Bermak, and H. C. Luong, "Low Voltage Low Power CMOS Temperature Sensor Circuit," *Chinese Patent, No. 102,338,669A*, granted in May 2014
- S. Rong and H. C. Luong, "Phase-Tuning Varactor-less VCOs with Multiple Phase Outputs," *US Patent*, *No.* 8,339,208, granted in December 2012
- H. Zheng and H.C. Luong, "Double-Balanced Quadrature-Input Quadrature-Output Divider," *US Patent, No. 8,140039*, granted in March 2012

- S. Rong and H. C. Luong, "Phase-Tuning Varactor-less VCOs with Multiple Phase Outputs," *Chinese Patent, CN 201010200870.5*, filed in December 2011
- H. Zheng and H.C. Luong, "Double-Balanced Quadrature-Input Quadrature-Output Divider," *US Patent*, *No.* 8,140,039, granted in March 2012
- S. Rong and H. C. Luong, "Injection-Locking-Range Enhancement Technique for Frequency Dividers," *US Patent, No. 7,961,058*, granted in June 2011
- V. S. L. Cheung and H. C. Luong, "Switched-Opamp Technique for Low-Voltage Switched-Capacitor Circuits," *Chinese Patent, No. ZL 01,802,426.5*, granted in February 2009
- K. C. Kwok and H. C. Luong, "Low-Voltage Low-Phase-Noise Voltage-Controlled Oscillator with Transformer Feedback," *US Patent, No. 7,411,468*, granted in August 2008
- V. S. L. Cheung and H. C. Luong, "Switched-Opamp Technique for Low-Voltage Switched-Capacitor Circuits," *European Patent, No. 1,252,633*, granted in October 2007
- L. Leung and H. C. Luong, "Dual-Mode Voltage-Controlled Oscillator Using Integrated Variable Inductors," *US Patent*, *No.* 7,268,634, granted in September 2007
- G. Leung and H. C. Luong, "A Double-Data Rate Phase-Locked-Loop with Phase Aligners to Reduce Clock Skew," *US Patent, No. 6,859,109*, granted in February 2005
- V. Cheung, J. Wong, and H. C. Luong, "Low-Voltage High-Frequency Frequency-Divider Circuit," *US Patent, No.* 6,831,489, granted in December 2004
- M. Waight, J. Marsh, and H. C. Luong, "Electronically Tuned Agile Integrated Bandpass Filter," *US Patent*, *No. 0198298*, granted in October 2004
- C. W. Lo and H. C. Luong, "Phase-Locked Loop Circuitry with Two Voltage-Controlled Capacitors," *US Patent, No. 6,538,519*, granted in March 2003
- V. S. L. Cheung and H. C. Luong, "Switched-Opamp Technique for Low-Voltage Switched-Capacitor Circuits," *US Patent, No. 6,344,767*, granted in February 2002 *Back To Top*

BOOKS

- H. C. Luong, and J. Yin, *Transformer-Based VCOs and Frequency Dividers*, Springer, November 2015 (*To Place an Order*)
- H. C. Luong, and G. C. T. Leung, *Low-Voltage RF CMOS Frequency Synthesizers*, Cambridge University Press, August 2004. (*To Place an Order*)
- V. S. L. Cheung and H. C. Luong, <u>Design of Low-Voltage CMOS Switched-Opamp</u>
 <u>Switched-Capacitor Systems</u>, Kluwer Academic Publishers, July 2003. <u>(To Place an Order)</u>
 Back To Top