Jeffrey S. Kauppila, Ph.D., P.E.
Curriculum Vitae
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Education:

- Ph.D., Electrical Engineering, Vanderbilt University, Nashville, TN, 2015
  Concentration Area: Radiation Effects on Electronic Circuits
- M. S., Electrical Engineering, Vanderbilt University, Nashville, TN, 2003
  Concentration Area: Radiation Effects on Electronic Circuits
- B. S., Electrical Engineering, Vanderbilt University, Nashville, TN, 2001

Dissertation Title:

Layout-Aware Modeling and Analysis Methodologies for Transient Radiation Effects on Integrated Circuit Electronics

Dissertation Abstract:

The design of radiation-hardened integrated circuits is increasingly simulation driven, and increased costs to fabricate designs require engineers to consider transient radiation effects in the simulation and design phase to limit fabrication and test cycles required to produce a radiation-hardened part. This work advances the historical modeling approaches with bias-dependent and layout-aware methods for modeling the dose-rate and single-event effects in advanced technologies. A novel layout-aware analysis method has been developed, utilizing a hybrid of compact models (for efficiency) and spatially-aware layout objects (for geometric charge collection accuracy), in an industry standard integrated circuit design tool flow. The layout-aware analysis provides designers with visual feedback about the sensitivity of a design directly referenced to the circuit layout. The methods developed in this research are being actively utilized in radiation-effects research at universities, aerospace and defense corporations, and commercial integrated circuit design and manufacturing organizations. This research develops capabilities that provide a path forward to model transient radiation effects in advanced integrated circuit technologies.

Employment Experience:

- Dept. of Electrical Engineering and Computer Science – Vanderbilt University
  Research Assistant Professor
  Nashville, TN
  2016 – Present

- Institute for Space and Defense Electronics – Vanderbilt University
  Research Assistant Professor (2016 to Present), ISDE Senior Research Engineer (2009 to 2016), Staff Engineer (2003 to 2009)
  Nashville, TN
  2003 – Present
- Radiation Effects and Reliability Group – Vanderbilt University School of Engineering, Department of Electrical Engineering and Computer Science
  Research Assistant
  Nashville, TN
  2001 – 2003
- North Star Systems, Inc.
  Engineering Internship
  Birmingham, AL
  Summers of 1998 – 2001

Teaching Experience:

- EECE 2116 – Digital Logic, Spring 2017
- Substitute Teaching Experience:
  - Undergraduate Courses: EECE 2112 (Circuits I), EECE 2213 (Circuits II), EECE 3233 (Electromagnetics), EECE 4380 (Electronics II), EECE 4385 (VLSI Design)
  - Graduate Courses: EECE 6304 (Radiation Effects/Reliability), EECE 6341 (Advanced Analog Electronics), EECE 6342 (Advanced Digital Electronics)

Publications:

- P. Nsengiyumva, L. W. Massengill, M. L. Alles, B. L. Bhuva, D. R. Ball, **J. S. Kauppila**, T. D. Haeffner, W. T. Holman, and R. A. Reed, "Analysis of Bulk FinFET Structural Effects on Single-Event Cross Sections," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 1, pp. 441-448, Jan. 2017.
- M. P. King, X. Wu, M. Eller, S. Samavedam, M. R. Shaneyfelt, A. I. Silva, B. L. Draper, W. C. Rice, T. L. Meisenheimer, J. A. Felix, E. X. Zhang, T. D. Haeffner, D. R. Ball, K. J. Shetler, M. L. Alles, **J. S. Kauppila**, and L. W. Massengill, "Analysis of TID Process, Geometry, and Bias Condition Dependence in 14-nm FinFETs and Implications for RF and SRAM Performance," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 1, pp. 285-292, Jan. 2017.
- T. D. Loveless, S. Jagannathan, E. X. Zhang, D. M. Fleetwood, **J. S. Kauppila**, T. D. Haeffner, and L. W. Massengill, "Combined Effects of Total Ionizing Dose and Temperature on a K-Band Quadrature LC-Tank VCO in a 32 nm CMOS SOI Technology," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 1, pp. 204-211, Jan. 2017.
- Y. P. Chen, T. D. Loveless, A. L. Sternberg, E. X. Zhang, **J. S. Kauppila**, B. L. Bhuva, W. T. Holman, M. L. Alles, R. A. Reed, D. McMorrow, R. D. Schrimpf, and L. W. Massengill, "Persistent Laser-Induced Leakage in a 20 nm Charge-Pump Phase-Locked Loop (PLL)," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 1, pp. 512-518, Jan. 2017.

- K. J. Shetler, W. T. Holman, **J. S. Kauppila**, A. F. Witulski, B. L. Bhuva, E. X. Zhang, and L. W. Massengill, "Total Dose Measurement Circuit Design Based on a Voltage Reference Topology," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 1, pp. 559-566, Jan. 2017.
- H. B. Wang, **J. S. Kauppila**, K. Lilja, M. Bounasser, L. Chen, M. Newton, Y. Q. Li, R. Liu, B. L. Bhuva, S. J. Wen, R. Wong, R. Fung, S. Baeg, and L. W. Massengill, "Evaluation of SEU Performance of 28-nm FDSOI Flip-Flop Designs," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 1, pp. 367-373, Jan. 2017.
- H. B. Wang, L. Chen, R. Liu, Y. Q. Li, **J. S. Kauppila**, B. L. Bhuva, K. Lilja, S. J. Wen, R. Wong, R. Fung, and S. Baeg, "An Area Efficient Stacked Latch Design Tolerant to SEU in 28 nm FDSOI Technology," *IEEE Transactions on Nuclear Science*, vol. 63, no. 6, pp. 3003-3009, Dec. 2016
- P. Nsengiyumva, N. Tam, M.W. McCurdy, A.L. Sternberg, **J.S. Kauppila**, D.R. Ball, W.T. Holman, B.L. Bhuva, L.W. Massengill, "A Comparison of the SEU Response of Planar and FinFET D Flip-Flops at Advanced Technology Nodes," *IEEE Trans. Nucl. Sci.*, vol. 63, no. 1, pp. 266-272, Feb. 2016.
- **J.S. Kauppila**, W.H. Kay, T.D. Haeffner, D.L. Rauch, T.R. Assis, N.N. Mahatme, N.J. Gaspard, B.L. Bhuva, M.L. Alles, W.T. Holman, L.W. Massengill, "Single-Event Upset Characterization Across Temperature and Supply Voltage for a 20-nm Bulk Planar CMOS Technology," *IEEE Trans. Nucl. Sci.*, vol. 62, no. 6, pp. 2613-2619, Dec. 2015
- T.R. Assis, K. Ni, **J.S. Kauppila**, B.L. Bhuva, R.D. Schrimpf, L.W. Massengill, S. Wen, R. Wong, C. Slayman, "Estimation of Single-Event-Induced Collected Charge for Multiple Transistors Using Analytical Expressions," *IEEE Trans. Nucl. Sci.*, vol.62, no. 6, pp. 2853-2859, Dec. 2015
- K.J. Shetler, N.M. Atkinson, W.T. Holman, **J.S. Kauppila**, T.D. Loveless, A.F. Witulski, B.L. Bhuva, E.X. Zhang, L.W. Massengill, "Radiation Hardening of Voltage References Using Chopper Stabilization," *IEEE Trans. Nucl. Sci.*, vol. 62, no. 6, pp. 3064-3071, Dec. 2015
- C.N. Arutt, K.M. Warren, R.D. Schrimpf, R.A. Weller, **J.S. Kauppila**, J.D. Rowe, A.L. Sternberg, R.A. Reed, D.R. Ball, D.M. Fleetwood, "Proton Irradiation as a Screen for Displacement-Damage Sensitivity in Bipolar Junction Transistors," *IEEE Trans. Nucl. Sci.*, vol. 62, no. 6, pp. 2498-2504, Dec. 2015
- **J. S. Kauppila**, D. R. Ball, M. L. Alles, R. D. Schrimpf, T. D. Loveless, J. A. Maharrey, R. C. Quinn, J. D. Rowe, L. W. Massengill, "Geometry-Aware Single-Event Enabled Compact Models for Sub-50nm Partially Depleted Silicon-on-Insulator Technologies," *IEEE Trans. Nucl. Sci.*, vol. 62, no. 4, pp. 1589-1598, Aug. 2015
- T.D. Haeffner, T.D. Loveless, E.X. Zhang, A.L. Sternberg, S. Jagannathan, R.D. Schrimpf, **J.S. Kauppila,** M.L. Alles, D.M. Fleetwood, L.W. Massengill, N.F. Haddad, "Irradiation and Temperature Effects for a 32 nm RF Silicon-on-Insulator CMOS Process," *IEEE Trans. Nucl. Sci.*, vol. 61, no. 6, pp. 3037-3042, Dec. 2014

- **J. S. Kauppila**, K. M. Warren, D. R. Ball, M. L. Alles, T. D. Haeffner, A. L. Sternberg, S. E. Armstrong, P. Cole, R. D. Schrimpf, and L. W. Massengill, “Dose Rate Enabled Compact Models for Dielectrically Isolated Integrated Circuit Processes,” *Journal of Radiation Effects, Research, and Engineering*; vol. 32, no. 1, pp. 29-38, Sept. 2014
- **J. S. Kauppila**, J. D. Rowe, A. L. Sternberg, D. R. Herbison, A. F. Witulski, M. W. Mccurdy, D. Valadez, R. D. Schrimpf, and L. W. Massengill, “Radiation-Enabled Model Development for a Library of Common Active Discrete Components,” *Journal of Radiation Effects, Research, and Engineering*; vol. 32, no. 1, pp. 39-48, Sept. 2014
- S.E. Armstrong, R.W. Blaine, **J.S. Kauppila**, N.M. Atkinson, A. Duncan, G. Berger, C.R. Wagner, W.T. Holman, L.W. Massengill, “Prompt-Dose Response of Single-Event Charge-Sharing-Based Mitigation in Folded-Cascode Amplifiers,” *Journal of Radiation Effects, Research, and Engineering*; vol. 32, no. 1, pp. 1-8, Sept. 2014
- N.M. Atkinson, W.T. Holman, **J.S. Kauppila,** T.D. Loveless, N.C. Hooten, A.F. Witulski, B.L. Bhuva, L.W. Massengill, E. X. Zhang; J.H. Warner, "The Quad-Path Hardening Technique for Switched-Capacitor Circuits," *IEEE Trans. Nucl. Sci.*, vol. 60, no. 6, pp. 4356-4361, Dec. 2013
- S. Jagannathan, T.D. Loveless, E.X. Zhang, D.M. Fleetwood, R.D. Schrimpf, T.D. Haeffner, **J.S. Kauppila,** N. Mahatme, B.L. Bhuva, M.L. Alles, W.T. Holman, A.F. Witulski, L.W. Massengill, "Sensitivity of High-Frequency RF Circuits to Total Ionizing Dose Degradation," *IEEE Trans. Nucl. Sci.*, vol. 60, no. 6, pp. 4498-4504, Dec. 2013
- J.A. Maharrey, R.C. Quinn, T.D. Loveless, **J.S. Kauppila,** S. Jagannathan, N.M. Atkinson, N.J. Gaspard, E.X. Zhang, M.L. Alles, B.L. Bhuva, W.T. Holman, L.W. Massengill, "Effect of Device Variants in 32 nm and 45 nm SOI on SET Pulse Distributions," *IEEE Trans. Nucl. Sci.*, vol. 60, no. 6, pp. 4399-4404, Dec. 2013
- N.M. Atkinson, R.W. Blaine, **J.S. Kauppila,** S.E. Armstrong, T.D. Loveless, N.C. Hooten, W.T. Holman, L.W. Massengill, J.H. Warner, "RHBD Technique for Single-Event Charge Cancellation in Folded-Cascode Amplifiers," *IEEE Trans. Nucl. Sci.*, vol. 60, no. 4, pp. 2756-2761, Aug. 2013
- R.W. Blaine, N.M. Atkinson, **J.S. Kauppila,** S.E. Armstrong, N.C. Hooten, J.H. Warner, W.T. Holman, L.W. Massengill, "Differential Charge Cancellation (DCC) Layout as an RHBD Technique for Bulk CMOS Differential Circuit Design," *IEEE Trans. Nucl. Sci.*, vol. 59, no. 6, pp. 2867-2871, Dec. 2012
- A.V. Kauppila, B.L. Bhuva, T.D. Loveless, S. Jagannathan, N.J. Gaspard, **J.S. Kauppila,** L.W. Massengill, S-J Wen, R. Wong, G.L. Vaughn, W.T. Holman, "Effect of Negative Bias Temperature Instability on the Single Event Upset Response of 40 nm Flip-Flops," *IEEE Trans. Nucl. Sci.*, vol. 59, no. 6, pp. 2651-2657, Dec. 2012

- B. Narasimham, K. Chandrasekharan, Z. Liu, J.K. Wang, G. Djaja, N.J. Gaspard, **J.S. Kauppila,** B.L. Bhuva, "A Hysteresis-Based D-Flip-Flop Design in 28 nm CMOS for Improved SER Hardness at Low Performance Overhead," *IEEE Trans. Nucl. Sci.*, vol. 59, no. 6, pp. 2847-2851, Dec. 2012
- R.W. Blaine, N.M. Atkinson, **J.S. Kauppila,** T.D. Loveless, S.E. Armstrong, W.T. Holman, L.W. Massengill, "Single-Event-Hardened CMOS Operational Amplifier Design," *IEEE Trans. Nucl. Sci.*, vol. 59, no. 4, pp. 803-810, Aug. 2012
- T.D. Loveless, **J.S. Kauppila,** S. Jagannathan, D.R. Ball, J.D. Rowe, N.J. Gaspard, N.M. Atkinson, R.W. Blaine, T.R. Reece, J.R. Ahlbin, T.D. Haeffner, M.L. Alles, W.T. Holman, B.L. Bhuva, L.W. Massengill, "On-Chip Measurement of Single-Event Transients in a 45 nm Silicon-on-Insulator Technology," *IEEE Trans. Nucl. Sci.*, vol. 59, no. 6, pp. 2748-2755, Dec. 2012
- W. G. Bennett, R.D. Schrimpf, N.C. Hooten, R.A. Reed, **J.S. Kauppila,** R.A. Weller, K.M. Warren, M.H. Mendenhall, "Efficient Method for Estimating the Characteristics of Radiation-Induced Current Transients," *IEEE Trans. Nucl. Sci.*, vol. 59, no. 6, pp. 2704-2709, Dec. 2012
- **J.S. Kauppila,** T.D. Haeffner, D.R. Ball, A.V. Kauppila, T.D. Loveless, S. Jagannathan, A.L. Sternberg, B.L. Bhuva, L.W. Massengill, "Circuit-Level Layout-Aware Single-Event Sensitive-Area Analysis of 40-nm Bulk CMOS Flip-Flops Using Compact Modeling," *IEEE Trans. Nucl. Sci.*, vol. 58, no. 6, pp. 2680-2686, Dec. 2011
- R.W. Blaine, S.E. Armstrong, **J.S. Kauppila,** N.M. Atkinson, B.D. Olson, W.T. Holman, L.W. Massengill, "RHBD Bias Circuits Utilizing Sensitive Node Active Charge Cancellation," *IEEE Trans. Nucl. Sci.*, vol. 58, no. 6, pp. 3060-3066, Dec. 2011
- A.V. Kauppila, B.L. Bhuva, **J.S. Kauppila,** L.W. Massengill, W.T. Holman, "Impact of Process Variations on SRAM Single Event Upsets," *IEEE Trans. Nucl. Sci.*, vol. 58, no. 3, pp. 834-839, June 2011
- **J.S. Kauppila,** A.L. Sternberg, M.L. Alles, A.M. Francis, J. Holmes, O.A. Amusan, L.W. Massengill, "A Bias-Dependent Single-Event Compact Model Implemented Into BSIM4 and a 90 nm CMOS Process Design Kit," *IEEE Trans. Nucl. Sci.*, vol. 56, no. 6, pp. 3152-3157, Dec. 2009
- A.M. Francis, D. Dimitrov, **J.S. Kauppila,** A. Sternberg, M. Alles, J. Holmes, H.A. Mantooth, "Significance of Strike Model in Circuit-Level Prediction of Charge Sharing Upsets," *IEEE Trans. Nucl. Sci.*, vol. 56, no. 6, pp. 3109-3114, Dec. 2009
- A.V. Kauppila, G.L. Vaughn, **J.S. Kauppila,** L.W. Massengill, "Probabilistic Evaluation of Analog Single Event Transients," *IEEE Trans. Nucl. Sci.*, vol. 54, no. 6, pp. 2131-2136, Dec. 2007
- A.V Kauppila, L.W. Massengill, W.T. Holman, **J.S. Kauppila,** “Transient Radiation Analysis of a Folded Cascode Operational Amplifier Targeted to the Intersil EBHF Bipolar Process”, *Journal of Radiation Effects, Research, and Engineering*, vol. 23, no. 1, p. 149, Sept. 2007

- **J.S. Kauppila,** L.W. Massengill, W.T. Holman, A.V. Kauppila, S. Sanathanamurthy, "Single event Simulation methodology for analog/mixed signal design hardening," *IEEE Trans. Nucl. Sci.*, vol. 51, no. 6, pp. 3603- 3608, Dec. 2004
- A.V. Kauppila, L.W. Massengill, W.T. Holman, G.L. Vaughn, **J.S. Kauppila,** "Frequency-domain analysis of analog single-event transients (ASETs) based on energy spectral density," *IEEE Trans. Nucl. Sci.*, vol. 51, no. 6, pp. 3537-3545, Dec. 2004

Presentations and Proceedings:

- **J.S. Kauppila**, "Single-Event Modeling for Rad-Hard by Design Flows," 2016 IEEE Nuclear and Space Radiation Effects Conference Short Course Presentation, July 2016
- H. Jiang, H. Zhang, N. N. Mahatme, I. Chatterjee, T. R. Assis, **J. S. Kauppila**, B.L. Bhuva, L. W. Massengill, "Impact of Particle LET and Frequency on Combinational Logic Single-Event Effects for Advanced Technologies" Presented at 2016 RADECS
- Y.P. Chen, L.W. Massengill, B.L. Bhuva, W.T. Holman, **J.S. Kauppila**, T.D. Loveless, "Single-event Characterization of 1st and 2nd-order All-digital Phase-locked Loops (ADPLLs)," Presented at 2016 RADECS
- R.C. Quinn, **J. S. Kauppila**, K.M. Warren, Y.P. Chen, B.L. Bhuva, M. Bounasser, K. Lilja, and L. W. Massengill, "Probability of Latching an SET as an SEU in Advanced Technologies," Presented at 2016 RADECS
- W. T. Holman, B. L. Bhuva, **J. S. Kauppila**, A. F. Witulski, L. W. Massengill and M. L. Alles, "Advanced node-splitting techniques for radiation-hardened analog/mixed-signal circuits," *2016 IEEE Aerospace Conference*, Big Sky, MT, 2016, pp. 1-8.
- J. Ballast, E. Cannon, **J.S. Kauppila**, K. Lilja, L.W. Massengill, D. Blaauw, "Rad-Hard By Design (RHBD) Near-Threshold Computing (NTC) in 14nm CMOS," *Proceedings of Government Microcircuit Applications & Critical Technology Conference*, March 2016
- **J.S. Kauppila**, T.D. Loveless, T.D. Haeffner, A.L. Sternberg, D.R. Ball, J.D. Rowe, T. Assis, H. Jiang, H. Zhang, B.L. Bhuva, M.L. Alles, L.W. Massengill, "14/16nm FinFET Radiation Response Characterization," *Proceedings of Government Microcircuit Applications & Critical Technology Conference*, March 2016
- H. Zhang, H. Jiang, T.R. Assis, S. Ball, K. Ni, **J.S. Kauppila**, R.D. Schrimpf, L.W. Massengill, B. L. Bhuva, B. Narasimham, S. Hatami, A. Anvar, A. Lin, J. K. Wang, "Temperature Dependence of Soft-Error Rates for DFF designs in 20-nm Bulk Planar and 16-nm Bulk FinFET Technologies," *IEEE IRPS 2016*
- P. Nsengiyumva, B.L. Bhuva, M.L. Alles, D.R. Ball, **J.S. Kauppila**, W.T. Holman, L.W. Massengill, "Comparison of Soft Error Sensitive Area of Planar and FinFET Technologies" *IEEE IRPS 2016*
- T.R. Assis, **J.S. Kauppila**, B. L. Bhuva, R.D. Schrimpf, L.W. Massengill, "Estimation of Single-Event Transient Pulse Characteristics for Predictive Analysis" *IEEE IRPS 2016*

- J.A. Maharrey, **J.S. Kauppila**, R.C. Quinn, T.D. Loveless, E.X. Zhang, W.T. Holman, B.L. Bhuva, L.W. Massengill, "Heavy-Ion Induced SETs in 32nm SOI Inverter Chains," *2015 Proceedings of the NSREC Radiation Effects Data Workshop*, 2015
- R.C. Quinn, **J.S. Kauppila**, T.D. Loveless, J.A. Maharrey, J.D. Rowe, M.W. McCurdy, E.X. Zhang, M.L. Alles, B.L. Bhuva, R.A. Reed, W.T. Holman, M. Bounasser, K. Lilja, L.W. Massengill, "Heavy Ion SEU Test Data for 32nm SOI Flip-Flops," *2015 Proceedings of the NSREC Radiation Effects Data Workshop*, 2015
- **J.S. Kauppila**, "Modeling and Simulation of Radiation Effects on Electronic Circuits," ITAR Sidebar Tutorial, *2015 Hardened Electronics and Radiation Technology Technical Interchange Meeting*, April 2015
- **J.S. Kauppila**, J.A. Maharrey, R.C. Quinn, T.D. Loveless, T.D. Haeffner, J.D. Rowe, D.R. Ball, M.L. Alles, L.W. Massengill, "Single-Event Measurements and Modeling in 32nm SOI CMOS," *Proceedings of Government Microcircuit Applications & Critical Technology Conference*, March 2015
- **J.S. Kauppila**, T. D. Loveless, R. C. Quinn, J. A. Maharrey, M. L. Alles, M. W. McCurdy, R. A. Reed, K. Lilja, B. L. Bhuva, and L. W. Massengill, "Utilizing Device Stacking for Area Efficient Hardened SOI Flip-Flop Designs," *2014 IEEE Intl. Reliability Physics Symposium Proceedings*, pp. SE.4.1-7, 2014
- **J. S. Kauppila**, K. M. Warren, D. R. Ball, M. L. Alles, T. D. Haeffner, A. L. Sternberg, S. E. Armstrong, P. Cole, R. D. Schrimpf, and L. W. Massengill, "Dose Rate Enabled Compact Models for Dielectrically Isolated Integrated Circuit Processes (Extended Abstract)," *Proceedings of the Hardened Electronics and Radiation Technology Conference*, 2014
- A. Duncan, G. Berger, M. Gadlage, P. Cole, M. Savage, M. Kay, J. Titus, J.D. Ingalls, C. Hedge, S.E. Armstrong, **J.S. Kauppila**, "Strategic Radiation Response of Analog Circuits on a Commercial Bulk 180-nm High-Voltage LDMOS Process (Extended Abstract)," *Proceedings of the Hardened Electronics and Radiation Technology Conference*, 2014
- T. D. Loveless, J. A. Maharrey, **J. S. Kauppila**, R. C. Quinn, W. T. Holman, M. L. Alles, B. L. Bhuva, and L. W. Massengill, "Single-Event Transients in 45 nm and 32 nm Partially Depleted SOI Technologies," *Proceedings of Government Microcircuit Applications & Critical Technology Conference*, 2014
- N. Atkinson, W.T. Holman, **J.S. Kauppila**, T.D. Loveless, L.W. Massengill, A. Witulski, B.L. Bhuva, "Radiation Hardening Techniques for Precision Voltage References," *Proceedings of Government Microcircuit Applications & Critical Technology Conference*, 2014
- S. Jagannathan, T.D. Loveless, W.T. Holman, **J.S. Kauppila**, E. Zhang and L.W. Massengill, "Resurgence of TID Effects in High Frequency Nanoscale CMOS Circuits," *Proceedings of Government Microcircuit Applications & Critical Technology Conference*, 2014

- N. Gaspard, S. Jagannathan, Z. Diggins, A.V. Kauppila, T.D. Loveless, **J.S. Kauppila,** B.L. Bhuva, L.W. Massengill, W.T. Holman, A.S. Oates, Y. Fang, S. Wen, R. Wong, "Effect of threshold voltage implants on single-event error rates of D flip-flops in 28-nm bulk CMOS," *2013 IEEE International Reliability Physics Symposium (IRPS)*, vol., no., pp.SE.7.1,SE.7.3, 14-18 April 2013
- M.L. Alles, R.D. Schrimpf, R.A. Reed, L.W. Massengill, R.A. Weller, M.H. Mendenhall, D.R. Ball, K.M. Warren, T.D. Loveless, **J.S. Kauppila,** B.D. Sierawski, "Radiation hardness of FDSOI and FinFET technologies," *2011 IEEE International SOI Conference*, pp.1-2, 3-6 Oct. 2011
- R.W. Blaine, N.M. Atkinson, **J.S. Kauppila,** S.E. Armstrong, W.T. Holman, L.W. Massengill, "A single-event-hardened CMOS operational amplifier design," *2011 12th European Conference on Radiation and Its Effects on Components and Systems (RADECS)*, pp. 123-127, 19-23 Sept. 2011
- **J.S. Kauppila**, A.L. Sternberg, M.L. Alles, T.D. Loveless, B.L. Bhuva, W.T. Holman, and L.W. Massengill*, "Radiation-Enabled Compact Models for Advanced Technology Integrated Circuit Design," Proceedings of Government Microcircuit Applications & Critical Technology Conference*, 2011
- **J.S. Kauppila**, M.L. Alles, R.D. Schrimpf, M. Gadlage, S. Armstrong, L.W. Massengill, "Addressing the Challenges for Future Radiation-Hardened Microelectronics," *2009 American Society of Naval Engineers: Global Deterrence and Defense Symposium*, Sept. 2009
- P. Tuinenga, A. Witulski, **J.S. Kauppila,** M. McCurdy, D. Herbison, L.W. Massengill, "Nonlinear Magnetics Modeling for Magamp Power Regulation," *2008 IEEE Power Electronics Specialists Conference,* pp. 3118-3121, 15-19 June 2008
- **J. S. Kauppila,** J. D. Rowe, M. Walsh, J. Rhan, P. W. Tuinenga, K. Biermann, "Radiation-Enabled Analog/Mixed Signal ASICs in DxSim with Eldo and Verilog-A," *Proceedings of the Mentor Graphics User2User Conference*, 2006
- **J.S. Kauppila,** K.M. Warren, D.R. Ball, L.W. Massengill, R.D. Schrimpf, J. Ruthberg, D. Brand, S. Ditullio, S. van Dyk, "Development of a Radiation-Enabled Process Design Kit for an SOI CMOS Technology," *Proceedings of the 2004 AIAA Missile Sciences Conference*

Book Publications:

- **J.S. Kauppila**, "Single-Event Modeling for Rad-Hard by Design Flows," 2016 IEEE Nuclear and Space Radiation Effects Conference Short Course Notebook, July 2016
- **J.S. Kauppila**, "Best Practices for Modeling Radiation Effects in Mixed Signal Circuits," Chapter 37, *Extreme Environment Electronics*, ed. J.D. Cressler and H.A. Mantooth, CRC Press, Nov. 2012

Publications and Presentations in Progress:

- H. Jiang, H. Zhang, N. N. Mahatme, I. Chatterjee, T. R. Assis, **J. S. Kauppila**, B.L. Bhuva, L. W. Massengill, "Impact of Particle LET and Frequency on Combinational Logic Single-Event Effects for Advanced Technologies" Submitted to *IEEE Transactions on Nuclear Science* – In Review
- Y.P. Chen, L.W. Massengill, B.L. Bhuva, W.T. Holman, **J.S. Kauppila**, T.D. Loveless, "Single-event Characterization of 1st and 2nd-order All-digital Phase-locked Loops (ADPLLs)," Submitted to *IEEE Transactions on Nuclear Science* – In Review
- R.C. Quinn, **J. S. Kauppila**, K.M. Warren, Y.P. Chen, B.L. Bhuva, M. Bounasser, K. Lilja, and L. W. Massengill, "Probability of Latching an SET as an SEU in Advanced Technologies," Submitted to *IEEE Transactions on Nuclear Science* – In Review
- A. Duncan, G. Berger, M. Gadlage, P. Cole, M. Savage, M. Kay, J. Titus, J.D. Ingalls, C. Hedge, S.E. Armstrong, **J.S. Kauppila**, "Strategic Radiation Response of Analog Circuits on a Commercial Bulk 180-nm High-Voltage LDMOS Process," *Journal of Radiation Effects, Research, and Engineering* – In Review

Technical Conference and Community Service:

- Finance Chair – 2017 Hardened Electronics and Radiation Technology Technical Interchange Meeting (HEART)
- Short Course Presenter – 2016 IEEE Nuclear and Space Radiation Effects Conference (NSREC)
- ITAR Sidebar Presenter – 2015 Hardened Electronics and Radiation Technology (HEART) Conference

Awards, Fellowships, Societies:

- Best Paper, DxDesigner Track, Mentor Graphics User2User Conference, 2006
- National Defense Industrial Association, Tennessee Valley Chapter, Space and Missile Defense Working Group Post-Graduate Fellowship Award, 2003
- IBM Topping-Up Graduate Fellowship Award, 2001
- Tau Beta Pi, 2001
- Eta Kappa Nu, 2000

Professional Memberships:

- IEEE Member, 1998 – Present
  Nuclear and Plasma Sciences Society Member, 2001 – Present

Professional Licensure:

- Professional Engineer in the state of Tennessee, 2007, License Number 111682
- Engineer in Training, 2003