

Piero Triverio

Associate Professor

The Edward S. Rogers Sr. Department
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- Current Position ▷ **Associate Professor**
Edward S. Rogers Sr. Department of Electrical and Computer Engineering, University of Toronto, July 2017 - present
Institute of Biomaterials and Biomedical Engineering, University of Toronto, July 2018 - present
Cardiovascular Sciences Collaborative Specialization, Full member, October 2019 - present
Research interests: computational electromagnetism, model order reduction, computational fluid dynamics, modeling of cardiovascular diseases, computational quantum mechanics
- ▷ **Canada Research Chair in Computational Electromagnetics**
June 2018 - present
- Previous Positions ▷ **Assistant Professor**
Electrical and Computer Engineering Department, University of Toronto, Canada
September 2011 - June 2017
- ▷ **Canada Research Chair in Modeling of Electrical Interconnects**
June 2013 - May 2018
- Education ▷ **Ph.D. in Electronic Engineering and Communications**
Politecnico di Torino, Italy, April 2009
Thesis title: Self consistent, efficient and parametric macromodels for high-speed interconnects design.
Supervisor: Prof. S. Grivet-Talocia
- ▷ **Laurea Specialistica [M. A. Sc.] Degree in Electronic Engineering**
Politecnico di Torino, Italy, October 2005
Thesis title: Causality, stability and passivity in macromodels of high-speed interconnects.
Final grade: summa (110/110) cum laude with honors (dignity of publication)
Supervisors: Prof. F. Canavero, Prof. S. Grivet-Talocia
- ▷ **Laurea [B. Sc.] Degree in Electronic Engineering**
Politecnico di Torino, Italy, July 2003
Thesis title: Model order reduction of linear circuits.
Final grade: summa (110/110) cum laude
Supervisor: Prof. S. Grivet-Talocia
- Research Experience ▷ **Post-Doctoral Researcher**

Department of Electronics, Politecnico di Torino, March 2009 - July 2011

Research interests: simulation of large-scale systems, model order reduction, signal integrity and electromagnetic compatibility, high-performance computing.

▷ **Visiting Researcher**

Massachusetts Institute of Technology, Cambridge, USA, November - December 2010, May - June 2011

Research group: Research Laboratory of Electronics (Prof. L. Daniel)

▷ **Visiting Researcher**

Carleton University, Ottawa, Canada, October 2009 - January 2010

Research group: Computer Aided Engineering Research Laboratory (Prof. M. Nakhla)

▷ **Visiting Ph.D. Student**

Carleton University, Ottawa, Canada, March - December 2007

Visiting Ph.D. student at the Computer-Aided Engineering Research Lab.

Supervisor: Prof. M. Nakhla

▷ **Visiting Student**

Carleton University, Ottawa, Canada, January - May 2005

Supervisors: Prof. M. Nakhla, Prof. R. Achar

Awards

- ▷ **Canada Research Chair** in Computational Electromagnetics (June 2018 - present)
- ▷ **Best Paper Award**, 26th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, October 2017 (with U. Patel, S. Sharma, S. Yang and S. Hum)
- ▷ **Best Student Paper Award**, 21st IEEE Workshop on Signal and Power Integrity, May 2017 (with Utkarsh Patel and Sean Hum)
- ▷ **Best Student Paper Award**, 25th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, October 2016 (with Fadime Bekmambetova and Xinyue Zhang)
- ▷ **Ontario Early Researcher Award**, March 2016
- ▷ **Canada Research Chair** in Modeling of Electrical Interconnects (June 2013 - May 2018)
- ▷ **Connaught New Researcher Award**, May 2013
- ▷ **EuMIC Young Engineer Prize**, 13th European Microwave Week, September 2010, Paris, France
- ▷ **Best Paper Award**, IEEE 17th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP), October 2008, San Jose, California
- ▷ **2007 Best Paper Award**, IEEE Transactions on Advanced Packaging
- ▷ **Best Student Paper Award**, IEEE 15th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP), October 2006, Scottsdale, AZ (USA)
- ▷ **OPTIME Award** from the Industry Association of Torino, Italy, September 2006

Other Distinctions

- ▷ Best Paper Award Finalist, 2014 IEEE International Conference on Signal and Power Integrity, August 2014
- ▷ "Isabella Sassi Bonadonna 2005/6" fellowship from the AEIT association of Milan, Italy (20,000 USD)
- ▷ Ph.D. Scholarship from the Electronics Department of Politecnico di Torino (ranked 1st out of 21 candidates), January 2006
- ▷ Selected among the brightest students in Europe, Middle East and Africa for the IBM Top Student Recognition Event, Böblingen, Germany, July 2005

Teaching Experience ▷ **At the University of Toronto**

Term	Class	Size	Evaluation ¹
<i>(Undergraduate level)</i>			
Winter 2012	ECE259 Electricity and Magnetism	87	5.92 out of 7 (85%)
Fall 2012	ECE212 Circuit Analysis	107	6.02 out of 7 (86%)
Winter 2013	ECE259 Electricity and Magnetism	109	6.23 out of 7 (89%)
Fall 2013	ECE212 Circuit Analysis	95	4.40 out of 5 (88%)
Winter 2014	ECE259 Electricity and Magnetism	112	4.7 out of 5 (94%)
Fall 2014	ECE212 Circuit Analysis	124	4.4 out of 5 (88%)
Winter 2015	ECE259 Electricity and Magnetism	83	4.7 out of 5 (94%)
Winter 2016	ECE259 Electricity and Magnetism	98	4.7 out of 5 (94%)
Winter 2017	ECE259 Electricity and Magnetism	116	4.8 out of 5 (96%)
Winter 2017	ECE259 Electricity and Magnetism	118	4.6 out of 5 (92%)
Winter 2018	ECE259 Electricity and Magnetism	83	4.3 out of 5 (86%)
Winter 2020	ECE259 Electricity and Magnetism	102	
<i>(Graduate level)</i>			
Winter 2012	ECE1254 Modeling of Multiphysics Sys.	15	6.56 out of 7 (94%)
Winter 2013	ECE1254 Modeling of Multiphysics Sys.	16	6.42 out of 7 (92%)
Winter 2014	ECE1254 Modeling of Multiphysics Sys.	14	6.79 out of 7 (97%)
Fall 2014	ECE1254 Modeling of Multiphysics Sys.	9	4.8 out of 5 (96%)
Winter 2016	ECE1254 Modeling of Multiphysics Sys.	10	4.8 out of 5 (96%)
Winter 2018	ECE1254 Modeling of Multiphysics Sys.	12	4.5 out of 5 (90%)
Fall 2019	ECE1254 Modeling of Multiphysics Sys.	5	

▷ **At Politecnico di Torino**

Lecturer for "Calculus II" (undergraduate), January 2010 - April 2010 (in English)

Lecturer for "Electric circuits I" (undergraduate), September 2008 - December 2008 (in English)

Teaching Assistant in Circuit Theory, September 2003 - September 2005.

Supervisory Experience (in progress)

Post-Doctoral Fellows

1. Reza Gholami, 1/2020 - 12/2020 (Prof. S. Hum)

Topic: Computational Modeling of Metasurface Antennas and Metamaterials

Current position: Postdoctoral fellow, University of Toronto

Ph.D. Students (Electrical & Computer Engineering)

1. Damian Marek, 9/2018 - 8/2022

Topic: Parallelization of a Surface-Based Integral Equation Method for Maxwell Equations

Current position: PhD candidate, University of Toronto

2. Shashwat Sharma, 5/2017 - 4/2021

Topic: High-Performance Electromagnetic Solver for 3D Integrated Circuits

Current position: PhD candidate, University of Toronto

¹Average student evaluation for the question "What is your overall rating of this instructor as a teacher?"

3. Fadime Bekmambetova, 9/2016 - 8/2020

Topic: A Highly-Scalable Model Order Reduction Scheme for RLC Circuits and Discretized Maxwell Equations

Current position: PhD candidate, University of Toronto

M.A.Sc. Students (Electrical & Computer Engineering)

1. Yiyang Fu, 9/2019 - 8/2021 (co-supervised with Dr. Laura Jimenez-Juan, Sunnybrook Health Sciences Centre)

Topic: Accurate prediction of hemodynamics in coronary arteries and grafts: a high-order finite elements approach

Current position: MSc student, University of Toronto

M.A.Sc. Students (Biomedical Engineering)

1. Nhien Tran-Nguyen, 9/2019 - 8/2021 (co-supervised with Dr. Laura Jimenez-Juan, Sunnybrook Health Sciences Centre)

Topic: Understanding the Role of Biomechanics in the Failure of Coronary Artery Bypass Grafts: a Study Based on Computational Fluid Dynamics

Current position: MSc student, University of Toronto

Visiting Ph.D. Students

1. Elisa Fevola, 2/2020 - 12/2020 (co-supervised with Prof. S. Grivet Talocia, Prof. G. Rozza, Dr. L. Jimenez-Juan)

From: Politecnico di Torino

Topic: Reduced basis methods applied to the modeling of coronary artery disease

Current position: PhD student

4th Year Thesis Students (Engineering Science)

1. Siyu Xu, 9/2019 - 4/2020

Current position: Undergraduate student, University of Toronto

Supervisory
Experience
(com-
pleted)

Graduated Post-Doctoral Fellows (Electrical & Computer Engineering)

1. Francesca Condemni, 4/2018 - 9/2019 (co-supervised with Dr. Laura Jimenez-Juan, Sunnybrook Health Sciences Centre)

Topic: Towards an Early Detection of Coronary Artery Bypass Graft Failure: A Computational Fluid Dynamics Approach Based on CT and 4D-Flow MRI

Current position: R&D Simulation Engineer, Corwave

2. Shunchuan Yang, 10/2015 - 2/2017

Topic: Fast Electromagnetic Analysis for Interconnects in 3D Integrated Circuits

Current position: Assistant Professor, Beihang University

Graduated Ph.D. Students (Electrical & Computer Engineering)

1. Xinyue Zhang, 9/2014 - 12/2019
Thesis title: Reduced-Order Modeling in the Finite-Difference Time-Domain Method
Current position: Analyst, Scotiabank
2. Utkarsh Patel, 9/2014 - 6/2019 (co-supervision with Prof. S. Hum)
Thesis title: Reduced-Order Integral Equation Methods To Solve Complex Electromagnetic Problems
Current position: Postdoc, University of Michigan

Graduated M.A.Sc. Students (Electrical & Computer Engineering)

1. Zihan Chen, 9/2015 - 9/2017 (co-supervised with Dr. Laura Jimenez-Juan, Sunnybrook Health Sciences Centre)
Thesis title: Non-Invasive Assessment of Aortic Coarctation Severity Using Computational Fluid Dynamics
Current position: Intel
2. Chen Sun, 9/2014 - 3/2017
Thesis title: Minimizing Dispersion in FDTD Methods with CFL Limit Extension
Current position: Bell
3. Denis Oyaró, 9/2013 - 9/2015
Thesis title: Efficient Model Order Reduction of Electrical Networks with Many Ports
Current position: Microchip Technology
4. Xihao Li, 9/2012 - 9/2014 (co-supervision with Prof. C. Sarris)
Thesis title: Model Order Reduction and Stability Enforcement of Finite-Difference Time-Domain Equations Beyond the CFL Limit
Current position: Microchip Technology
5. Utkarsh Patel, 9/2012 - 9/2014
Thesis title: A Surface Admittance Approach For Fast Calculation of the Series Impedance of Cables Including Skin, Proximity, and Ground Return Effects
Current position: Ph.D. student, University of Toronto

Former Visiting Ph.D. Students

1. Jan Birgen Preibish, 9/2014 - 12/2014
From: Hamburg University of Technology, Germany
Topic: Extension of the Contour Integral Method for Stochastic Modeling of Waveguiding Structures
Current position: Nexperia Hamburg

Former Research Assistants

1. Niema Binth Mohammad, 10/2017 - 4/2018
Topic: High-Performance Electromagnetic Solver for 3D Silicon Interposers
Current position: PhD candidate, University of Toronto
2. Yushi Guan, 9/2015 - 4/2016
Topic: Development of a high-performance electromagnetic solver
Current position: Software Engineer, University of Toronto

Former Undergraduate Research Assistants

1. Raghav Srinivasan, 5/2019 - 8/2019
Current position: Undergraduate student, University of Toronto
2. D. L., 5/2019 - 8/2019 (co-supervised with Dr. Laura Jimenez-Juan, Sunnybrook Health Sciences Centre)
Current position: Undergraduate student, University of Toronto
3. Salar Hosseini Khorasgani, 5/2018 - 8/2018
Current position: Undergraduate student, University of Toronto
4. Connor Frames, 5/2018 - 6/2018
Current position: Intern, Microsemi Co
5. Fadime Bekmambetova, 5/2016 - 8/2016
Current position: PhD candidate, University of Toronto
6. Luyuan Chen, 5/2016 - 8/2016
Current position: MASc candidate, University of Toronto
7. Fadime Bekmambetova, 5/2015 - 8/2015
Current position: PhD candidate, University of Toronto
8. Curtis Williams, 5/2015 - 8/2015 (co-supervised with Dr. Jimenez-Juan)
Current position: Medicine student, University of Toronto
9. Aijia Gao, 5/2015 - 8/2015
Current position: Hydro One
10. Rein Otsason, 5/2014 - 8/2014
Current position: MASc student, University of Toronto
11. Pushkar Bettadpur, 5/2014 - 8/2014
Current position: MASc student, University of Toronto
12. Fabian Chow, 5/2012 - 8/2012
Current position: Deloitte
13. Stefania Raimondo, 5/2012 - 8/2012
Current position: MASc student, University of Toronto

Former 4th Year Thesis Students (Engineering Science)

1. Karl Chen, 9/2018 - 4/2019
Current position: Google, US
2. Qianshu Lu, 9/2016 - 4/2017
Current position: PhD student, Harvard University
3. Fadime Bekmambetova, 9/2015 - 4/2016
Current position: PhD student, University of Toronto
4. Aijia Gao, 9/2015 - 4/2016
Current position: Hydro One

Former 4th Year Project Students (Electrical & Computer Engineering)

1. Chenyi Mao, 9/2015 - 4/2016
Current position: n/a
2. Xinyi Chang, 9/2015 - 4/2016
Current position: Kraft Heinz
3. Thianyu Zhou, 9/2015 - 4/2016
Current position: MSc candidate, University of Toronto
4. Clint Deygoo, 9/2013 - 4/2014
Current position: Alphawave IP
5. Zhiyao Ma, 9/2013 - 4/2014
Current position: n/a
6. Sze Tam, 9/2013 - 4/2014
Current position: Toronto Transit Commission
7. Seyed Yasrebi, 9/2013 - 4/2014
Current position: Founder, Arnocular
8. Yiwen Shen, 9/2013 - 4/2014
Current position: PhD candidate, Columbia University
9. Irwin D'Souza, 9/2012 - 4/2013
Current position: Compiler Developer, IBM
10. Kristoffer Atienza, 9/2012 - 4/2013
Current position: n/a
11. Vinu Deokaran, 9/2012 - 4/2013
Current position: Senior software developer, GM
12. Seung Youn, 9/2012 - 4/2013
Current position: n/a
13. Soon Kwon, 9/2012 - 4/2013
Current position: Member Technical Staff, AMD

Awards by my Students ▷ **Graduate Students**

- Shashwat Sharma, **Honorable Mention**, 2020 IEEE International Symposium on Antennas and Propagation, July 2020
- Fadime Bekmambetova, *Donald R. Studney Electromagnetics Graduate Award*, Electrical and Computer Engineering Department, University of Toronto, 2020
- Damian Marek, *Queen Elizabeth II Graduate Scholarship in Science and Technology (QEII-GSST)*, 2019-2020
- Shashwat Sharma, **Honorable Mention**, 2019 IEEE International Symposium on Antennas and Propagation, July 2019
- Utkarsh Patel, **Honorable Mention**, 2019 IEEE International Symposium on Antennas and Propagation, July 2019
- Shashwat Sharma, *Finalist for Best Student Paper Award*, 27th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, October 2018

- Utkarsh Patel, *Doctoral Completion Award*, Electrical and Computer Engineering Department, University of Toronto, September 2018
- Fadime Bekmambetova, *NSERC Postgraduate Scholarships-Doctoral Program (PGS-D)*, 2018 - 2021
- Utkarsh Patel, *IEEE Antennas and Propagation Society Doctoral Research Grant*, March 2018
- Fadime Bekmambetova, *Huawei Prize*, Electrical and Computer Engineering Department, University of Toronto, November 2017
- Utkarsh Patel, Shashwat Sharma and Shunchuan Yang, **Best Paper Award**, 26th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, October 2017
- Utkarsh Patel, **Best Student Paper Award**, 21st IEEE Workshop on Signal and Power Integrity, May 2017
- Utkarsh Patel, **Honorable Mention**, 2017 IEEE International Symposium on Antennas and Propagation, July 2017
- Fadime Bekmambetova, *NSERC Canada Graduate Scholarships-Master's (CGS M)*, 2017
- Fadime Bekmambetova and Xinyue Zhang, **Best Student Paper Award**, 25th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, October 2016
- Utkarsh Patel, *Finalist for Best Student Paper Award*, IEEE 25th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, October 2016
- Utkarsh Patel, *Finalist for Best Student Paper Award*, 2016 IEEE International Conference on Signal and Power Integrity, July 2016
- Utkarsh Patel, *NSERC Alexander Graham Bell Canada Graduate Scholarships-Doctoral Program (CGS-D)*, 2016-2018
- Jan B. Preibisch, **3rd Student Paper Prize**, IEEE International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization, 2015
- Utkarsh Patel, *Ontario Graduate Scholarship Program (OGS)*, 2013-2014, 2014-2015, 2015-2016

▷ **Undergraduate Students**

- Daniel Lu, *NSERC USRA Summer Research Award*, 2019
- Raghav Srinivasan, Kenneth Carless Smith Engineering Science Research Fellowship, 2019
- Salar Hosseini Khorasgani, *NSERC USRA Summer Research Award*, 2018
- Salar Hosseini Khorasgani, *Engineering Science Research Opportunity Program (ESROP) Fellowship*, 2018 (declined)
- Fadime Bekmambetova, *NSERC USRA Summer Research Award*, 2015 and 2016
- Curtis Williams, *Heart and Stroke Foundation of Ontario Summer Medical Student Award*, 2015
- Rein Otsason, *Runner-up in Electrical and Computer Engineering category*, UnERD 2014
- Pushkar Bettadpur, *NSERC USRA Summer Research Award*, 2014
- Yiwen Shen and Nima Yasrebi, *Certificate of Excellence in 4th year project*, 2014
- Stefania Raimondo, *Runner-up in Electrical and Computer Engineering category*, UnERD 2012
- Fabian Chow, *NSERC USRA Summer Research Award*, 2012
- Stefania Raimondo, *NSERC USRA Summer Research Award*, 2012
- Fabian Chow, *Engineering Science Research Opportunity Program (ESROP) Fellowship*, 2012 (declined)

- Stefania Raimondo, *Engineering Science Research Opportunity Program (ESROP) Fellowship*, 2012 (declined)

Publications The names of the trainees that I have supervised or co-supervised are in bold. My name is underlined.

▷ **Book Chapters**

- [BC1] P. Triverio, "Vector Fitting," in *Handbook on Model Order Reduction*, P. Benner, S. Grivet-Talocia, A. Quarteroni, G. Rozza, W. H. A. Schilders, L. M. Silveira, Ed. Berlin: De Gruyter, 2019, (in press, arxiv: 1908.08977).

▷ **Full Refereed Journals (submitted)**

- [JS1] Z. Zainib, F. Ballarin, S. Femes, P. Triverio, L. J. Juan, and G. Rozza, "Reduced order methods for parametric optimal flow control in coronary bypass grafts, towards patient-specific data assimilation," *Int. J. Numer. Method. Biomed. Eng.*, 2019.
- [JS2] **U. R. Patel**, P. Triverio, and S. V. Hum, "A Fast Macromodeling Approach to Efficiently Simulate Inhomogeneous Electromagnetic Surfaces," *IEEE Trans. Antennas Propag.*, 2019.

▷ **Full Refereed Journals (published or in press)**

- [J1] **F. Bektambetova** and **X. Zhang** and P. Triverio, "A Dissipation Theory for Three-Dimensional FDTD with Application to Stability Analysis and Subgridding," *IEEE Trans. Antennas Propag.*, vol. 66, pp. 7156–7170, 2018.
- [J2] **U. R. Patel** and P. Triverio and S. V. Hum, "A Macromodeling Approach to Efficiently Compute Scattering from Large Arrays of Complex Scatterers," *IEEE Trans. Antennas Propag.*, vol. 66, no. 11, pp. 6158–6169, 2018.
- [J3] **X. Zhang** and **F. Bektambetova** and P. Triverio, "A Stable FDTD Method with Embedded Reduced-Order Models," *IEEE Trans. Antennas Propag.*, vol. 66, no. 2, pp. 827–837, 2018.
- [J4] **U. R. Patel** and P. Triverio and S. V. Hum, "A Novel Single-Source Surface Integral Method to Compute Scattering from Dielectric Objects," *IEEE Antennas Wireless Propag. Lett.*, vol. 16, no. 1, pp. 1536–1225, 2017.
- [J5] **F. Bektambetova** and **X. Zhang** and P. Triverio, "A Dissipative Systems Theory for FDTD with Application to Stability Analysis and Subgridding," *IEEE Trans. Antennas Propag.*, vol. 65, no. 2, pp. 751–762, 2017.
- [J6] **U. R. Patel** and P. Triverio, "Skin Effect Modeling in Conductors of Arbitrary Shape Through a Surface Admittance Operator and the Contour Integral Method," *IEEE Trans. Microw. Theory Techn.*, vol. 64, no. 9, pp. 2708–2717, 2016.
- [J7] Bjorn Gustavsen, Martin Hoyer-Hansen, **U. R. Patel** and P. Triverio, "Inclusion of Wire Twisting Effects in Cable Impedance Calculations," *IEEE Trans. Power Del.*, vol. 31, no. 6, pp. 2520–2529, 2016.
- [J8] **D. Oyaró** and P. Triverio, "TurboMOR-RC: an Efficient Model Order Reduction Technique for RC Networks with Many Ports," *IEEE Trans. Comput.-Aided Design Integr. Circuits Syst.*, vol. 35, no. 10, pp. 1695–1706, 2016.
- [J9] **U. R. Patel** and P. Triverio, "Accurate Impedance Calculation for Underground and Submarine Power Cables using MoM-SO and a Multilayer Ground Model," *IEEE Trans. Power Del.*, vol. 31, no. 3, pp. 1233–1241, 2016.
- [J10] **U. R. Patel** and P. Triverio, "MoM-SO: a Complete Method for Computing the Impedance of Cable Systems Including Skin, Proximity, and Ground Return Effects," *IEEE Trans. Power Del.*, vol. 30, no. 5, pp. 2110–2118, 2015.

- [J11] **X. Li** and C. D. Sarris and P. Triverio, "Structure-Preserving Reduction of Finite-Difference Time-Domain Equations with Controllable Stability Beyond the CFL Limit," *IEEE Trans. Microw. Theory Techn.*, vol. 62, no. 12, pp. 3228–3238, 2014.
 - [J12] **U. R. Patel**, B. Gustavsen, and P. Triverio, "Proximity-Aware Calculation of Cable Series Impedance for Systems of Solid and Hollow Conductors," *IEEE Trans. Power Del.*, vol. 29, no. 5, pp. 2101–2109, 2014.
 - [J13] P. Triverio, "Robust Causality Check for Sampled Scattering Parameters via a Filtered Fourier Transform," *IEEE Microw. Wireless Compon. Lett.*, vol. 24, no. 2, pp. 72–74, 2014.
 - [J14] **U. R. Patel**, B. Gustavsen, and P. Triverio, "An Equivalent Surface Current Approach for the Computation of the Series Impedance of Power Cables with Inclusion of Skin and Proximity Effects," *IEEE Trans. Power Del.*, vol. 28, no. 4, pp. 2474–2482, 2013.
 - [J15] A. Chinae, S. Grivet-Talocia, **H. Hu**, P. Triverio, D. Kaller, C. Siviero, M. Kindscher, "Signal integrity verification of multi-chip links using passive channel macromodels," *IEEE Trans. Compon., Packag., Manuf. Technol.*, vol. 1, no. 6, pp. 920–933, 2011.
 - [J16] A. Chinae, P. Triverio, S. Grivet-Talocia, "Delay-based macromodeling of long interconnects from frequency-domain terminal responses," *IEEE Trans. Adv. Packag.*, vol. 33, no. 1, pp. 246–256, 2010.
 - [J17] P. Triverio, S. Grivet-Talocia, A. Chinae, "Identification of highly efficient delay-rational macromodels of long interconnects from tabulated frequency data," *IEEE Trans. Microw. Theory Techn.*, vol. 58, no. 3, pp. 566–577, 2010.
 - [J18] P. Triverio, S. Grivet-Talocia, M. Bandinu, F. Canavero, "Geometrically-parameterized circuit models of printed circuit board traces inclusive of antenna coupling," *IEEE Trans. Electromagn. Compat.*, vol. 52, pp. 471–478, 2010.
 - [J19] P. Triverio, S. Grivet-Talocia, M. S. Nakhla, "A parameterized macromodeling strategy with uniform stability test," *IEEE Trans. Adv. Packag.*, vol. 32, no. 1, pp. 205–215, 2009.
 - [J20] P. Triverio and S. Grivet-Talocia, "Robust Causality Characterization via Generalized Dispersion Relations," *IEEE Trans. Adv. Packag.*, vol. 31, no. 3, pp. 579–593, 2008.
 - [J21] P. Triverio, S. Grivet-Talocia, M. S. Nakhla, F. Canavero, R. Achar, "Stability, causality, and passivity in electrical interconnect models," *IEEE Trans. Adv. Packag.*, vol. 30, no. 4, pp. 795–808, 2007, (**2007 Best Paper Award**).
- ▷ **Refereed Conferences and Workshops (published or definitively accepted)**
- [C1] S. Sharma, and P. Triverio, "A Single-Source Surface Impedance Formulation for Modeling Arbitrary Penetrable Media," in *IEEE AP-S Symposium on Antennas and Propagation and CNC/USNC-URSI Joint Meeting*, Montreal, July 5-10 2020, (**Honorable Mention**).
 - [C2] S. Sharma, and P. Triverio, "A Unified Fully-Accelerated Surface Integral Formulation for Efficient Modeling of Penetrable Media," in *IEEE AP-S Symposium on Antennas and Propagation and CNC/USNC-URSI Joint Meeting*, Montreal, July 5-10 2020.
 - [C3] **D. Marek**, **S. Sharma**, and P. Triverio, "An Efficient Parallelization Strategy for the Adaptive Integral Method Based on Graph Partitioning," in *14th European Conference on Antennas and Propagation (EuCAP)*, Copenhagen, Denmark, March 15-20 2020.
 - [C4] **F. Condemi**, S. Fremes, P. Triverio, and L. Jimenez-Juan, "Comparison of post-surgical wall shear stress values in arterial and venous coronary grafts using computational fluid dynamics guided by CCTA and 4D flow MR imaging," in *105th Scientific Assembly, Radiological Society of North America*, Chicago, IL, Dec. 1-6 2019.

- [C5] **S. Sharma**, and P. Triverio, "Efficient Electromagnetic Modeling of On-Chip Interconnects with a Hybrid 2D-3D Differential Surface Admittance Approach," in *IEEE International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Granada, Spain, September 9-13 2019.
- [C6] **F. Bekmambetova** and P. Triverio, "On the Extension of the TurboMOR-RC Reduction Method to RLC Circuits," in *23rd IEEE Workshop on Signal and Power Integrity*, Grenoble, France, June 18-21 2019.
- [C7] **S. Sharma**, and P. Triverio, "A Well-Conditioned Differential Surface Admittance Formulation for Modeling Penetrable Media," in *2019 IEEE AP-S Symposium on Antennas and Propagation*, Atlanta, GA, July 7-12 2019, (**Honorable Mention**).
- [C8] **X. Zhang**, and P. Triverio, "A Stable 3-D FDTD Method with Multiple Embedded Reduced-Order Models," in *2019 IEEE AP-S Symposium on Antennas and Propagation*, Atlanta, GA, July 7-12 2019.
- [C9] **U. R. Patel**, and P. Triverio, and S. V. Hum, "A Fast Macromodeling Approach to Simulate Complex Electromagnetic Surfaces," in *2019 IEEE AP-S Symposium on Antennas and Propagation*, Atlanta, GA, July 7-12 2019, (**Honorable Mention**).
- [C10] **F. Condemni**, S. Fremes, P. Triverio, and L. Jimenez-Juan, "On the use of 4D flow MRI to create patient-specific computational fluid dynamics models for patients with coronary artery bypass surgery," in *22nd Annual Scientific Sessions, Society for Cardiovascular Magnetic Resonance*, Bellevue, WA, Feb. 6 - 9 2019.
- [C11] **S. Sharma**, **U. Patel**, and P. Triverio, "Accelerated Electromagnetic Analysis of Interconnects in Layered Media using a Near-Field Series Expansion of the Green's Function," in *27th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Jose, CA, Oct. 14 - 17 2018, (**Finalist for Best Student Paper Award**).
- [C12] **S. Sharma**, and P. Triverio, "A Fast and Broadband Surface Method for Skin Effect Modeling in Multiscale Lossy Conductors," in *2018 IEEE AP-S Symposium on Antennas and Propagation*, Boston, MA, July 8-13 2018.
- [C13] **U. R. Patel**, P. Triverio, and S. V. Hum, "A Rigorous Macromodeling Approach to Efficiently Simulate Large Arrays of Complex Scatterers," in *2018 IEEE AP-S Symposium on Antennas and Propagation*, Boston, MA, July 8-13 2018.
- [C14] **F. Bekmambetova**, **X. Zhang**, and P. Triverio, "Acceleration of Shielding Effectiveness Analysis Using Stable FDTD Subgridding," in *26th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Jose, CA, Oct. 15 - 18 2017.
- [C15] **U. R. Patel**, **S. Sharma**, **S. Yang**, S. V. Hum, and P. Triverio, "Full-Wave Electromagnetic Characterization of 3D Interconnects Using a Surface Integral Formulation," in *26th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Jose, CA, Oct. 15 - 18 2017, (**Best Paper Award**).
- [C16] **U. R. Patel**, P. Triverio, and S. V. Hum, "A Single-Source Surface Integral Equation Formulation for Composite Dielectric Objects," in *2017 IEEE AP-S Symposium on Antennas and Propagation*, San Diego, CA, July 9-14 2017, (**Honorable Mention**).
- [C17] **F. Bekmambetova**, and P. Triverio, "A Dissipation Theory for 3-D FDTD with Application to Stable Subgridding," in *2017 IEEE AP-S Symposium on Antennas and Propagation*, San Diego, CA, July 9-14 2017.
- [C18] **X. Zhang**, and P. Triverio, "Reduced-Order Modeling in FDTD Subgridding with Complexity Independent of the Grid Refinement Ratio," in *2017 IEEE AP-S Symposium on Antennas and Propagation*, San Diego, CA, July 9-14 2017.
- [C19] **U. R. Patel**, S. V. Hum, and P. Triverio, "A Magneto-Quasi-Static Surface Formulation to Calculate the Impedance of 3D Interconnects with Arbitrary Cross-section," in *21st*

IEEE Workshop on Signal and Power Integrity, Baveno, Italy, May 7-10 2017, (**Best Student Paper Award**).

- [C20] **Z. Chen**, F. Ballarin, G. Rozza, A. M. Crean, L. Jimenez-Juan, and P. Triverio, "Non-invasive assessment of aortic coarctation severity using computational fluid dynamics: a feasibility study," in *20th Annual Scientific Sessions, Society for Cardiovascular Magnetic Resonance*, Washington, DC, Feb. 1-4 2017.
- [C21] **X. Zhang** and **F. Bektambetova** and P. Triverio, "Reduced Order Modeling in FDTD with Provable Stability beyond the CFL Limit," in *25th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Diego, CA, Oct. 23-26 2016.
- [C22] **F. Bektambetova** and **X. Zhang** and P. Triverio, "A Passivity Approach to FDTD Stability with Application to Interconnect Modeling," in *25th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Diego, CA, Oct. 23-26 2016, (**Best Student Paper Award**).
- [C23] **U. R. Patel**, S. V. Hum and P. Triverio, "Fast Parameter Extraction for Transmission Lines with Arbitrarily-Shaped Conductors and Dielectrics Using the Contour Integral Method," in *25th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Diego, CA, Oct. 23-26 2016, (**Finalist for Best Student Paper Award**).
- [C24] **J. B. Preibisch**, P. Triverio, and C. Schuster, "Design Space Exploration for Printed Circuit Board Vias Using Polynomial Chaos Expansion," in *2016 IEEE Intl. Conf. on Signal and Power Integrity*, Ottawa, Canada, July 25 - 29 2016.
- [C25] **U. R. Patel**, and P. Triverio, "A Fast Surface Method to Model Skin Effect in Transmission Lines with Conductors of Arbitrary Shape or Rough Profile," in *2016 IEEE Intl. Conf. on Signal and Power Integrity*, Ottawa, Canada, July 25-29 2016, (**Finalist for Best Student Paper Award**).
- [C26] **X. Zhang**, **F. Bektambetova**, and P. Triverio, "A Dissipative Control Approach to Ensure Stability in Advanced FDTD Schemes," in *2016 USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1 2016.
- [C27] **F. Bektambetova**, **X. Zhang**, and P. Triverio, "Accelerating Electromagnetic Simulations with Human Models through FDTD Subgridding and CFL Limit Extension," in *2016 USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1 2016.
- [C28] **U. R. Patel**, P. Triverio, and S. V. Hum, "Analysis of Radiating Microstrip Structures Using the Contour Integral Method," in *2016 IEEE International Symposium on Antennas and Propagation*, Fajardo, Puerto Rico, June 26 - July 1 2016.
- [C29] **D. Oyaró** and P. Triverio, "Fast Model Order Reduction of RC Networks with Very Large Order and Port Count," in *24th IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, San Jose, CA, Oct. 25-28 2015.
- [C30] **X. Li**, and P. Triverio, "Stable FDTD Simulations with Subgridding at the Time Step of the Coarse Grid: a Model Order Reduction Approach," in *IEEE MTT-S Int. Conf. on Numerical Electromagnetic and Multiphysics Modeling and Optimization*, Ottawa, Canada, August 11-14 2015.
- [C31] **J. B. Preibisch**, P. Triverio, and C. Schuster, "Efficient Stochastic Transmission Line Modeling Using Polynomial Chaos Expansion with Multiple Variables," in *IEEE MTT-S Int. Conf. on Numerical Electromagnetic and Multiphysics Modeling and Optimization*, Ottawa, Canada, August 11-14 2015, (**3rd Student Paper Prize**).
- [C32] **X. Li**, and P. Triverio, "Accelerating Multiscale Finite-Difference Time-Domain Simulations through Model Order Reduction and CFL Limit Extension," in *IEEE AP-S*

Symposium on Antennas and Propagation and URSI CNC/USNC Joint Meeting, July 19-24 2015.

- [C33] **U. R. Patel**, and P. Triverio, "A Comprehensive study on the Influence of Proximity Effects on Electromagnetic Transients in Power Cables," in *International Conference on Power Systems Transients*, Dubrovnik, Croatia, June 15-18 2015.
- [C34] **J. B. Preibisch**, P. Triverio, and C. Schuster, "Sensitivity Analysis of Vias Impedance using Polynomial Chaos Expansion," in *19th IEEE Workshop on Signal and Power Integrity*, Berlin, Germany, May 10-13 2015.
- [C35] P. Triverio, "An Accurate, Robust and Intuitive Technique to Detect Causality Violations in Broadband Frequency Measurements," in *2014 IEEE International Conference on Signal and Power Integrity (SIPI 2014)*, Raleigh, NC, August 3-8 2014, (**Finalist for Best SI/PI Paper Award**).
- [C36] **X. Li**, Costas D. Sarris, and P. Triverio, "Stability Preserving Model Order Reduction of FDTD with Stability Enforcement Beyond the CFL Limit," in *2014 IEEE International Symposium on Antennas and Propagation*, Memphis, Tennessee, USA, July 6-12 2014.
- [C37] **X. Li**, Costas D. Sarris, and P. Triverio, "Overcoming the FDTD Stability Limit via Model Order Reduction and Eigenvalue Perturbation," in *IEEE International Microwave Symposium (IMS 2014)*, Tampa Bay, FL, June 1-6 2014.
- [C38] P. Triverio, "Reliable Detection of Causality Violations in Tabulated Scattering Parameters through Filtered Dispersion Relations," in *22nd Conference on Electrical Performance of Electronic Packaging and Systems (EPEPS 2013)*, San Jose, CA, Oct. 27-30 2013.
- [C39] **U. R. Patel**, B. Gustavsen, and P. Triverio, "Application of the MoM-SO Method for Accurate Impedance Calculation of Single-Core Cables Enclosed by a Conducting Pipe," in *10th International Conference on Power Systems Transients (IPST 2013)*, Vancouver, Canada, July 18-20 2013.
- [C40] **U. R. Patel**, B. Gustavsen, and P. Triverio, "MoM-SO: a Fast and Fully-Automated Method for Resistance and Inductance Computation in High-Speed Cable," in *17th IEEE workshop on Signal and Power Integrity*, Paris, France, May 12-15 2013.
- [C41] S. Grivet-Talocia, **S. B. Olivadese**, P. Triverio, "A compression strategy for rational macromodeling of large interconnect structures," in *IEEE 20th Conference on Electrical Performance of Electronic Packaging and Systems (EPEPS)*, Oct. 2011, pp. 53–56.
- [C42] P. Triverio, M. Nakhla, S. Grivet-Talocia, "Extraction of parametric circuit models from scattering parameters of passive RF components," in *Proc. of the 5th European Microwave Integrated Circuits Conference*, Paris, September 27 - 28 2010, pp. 393 – 396, (**Young Engineer Prize**).
- [C43] P. Triverio, M. Nakhla, S. Grivet-Talocia, "Passive parametric modeling of interconnects and packaging components from sampled impedance, admittance or scattering data," in *Electronics System Integration Technology Conferences (ESTC)*, Berlin, Germany, September 13-16 2010.
- [C44] A. Chinae, P. Triverio, S. Grivet-Talocia, "Passive delay-based macromodels for signal integrity verification of multi-chip links," in *Proc. of the 14th IEEE Workshop on Signal Propagation on Interconnects, Hildesheim (Germany)*, May 2010, pp. 113–116.
- [C45] P. Triverio, M. Nakhla, S. Grivet-Talocia, "Passive parametric macromodeling from sampled frequency data," in *Proc. of the 14th IEEE Workshop on Signal Propagation on Interconnects, Hildesheim (Germany)*, May 2010, pp. 117–119.
- [C46] A. Chinae, S. Grivet-Talocia, P. Triverio, "On the performance of weighting schemes for passivity enforcement of delayed rational macromodels of long interconnects," in *Proc.*

of the 18th Conference on Electrical Performance of Electronic Packaging and Systems Portland (Tigard), Oregon, October 19-21 2009.

- [C47] P. Triverio, S. Grivet-Talocia, A. Chinea, "Black-box identification of delay-based macromodels from measured terminal responses," in *Proc. of the 13th IEEE Workshop on Signal Propagation on Interconnects, Strasbourg (France)*, May 12-15 2009, pp. 1-4.
 - [C48] P. Triverio, S. Grivet-Talocia, M.S. Nakhla, "On the construction of uniformly stable multivariate interconnect macromodels," in *Proc. of the 13th IEEE Workshop on Signal Propagation on Interconnects, Strasbourg (France)*, May 12-15 2009, pp. 1-4.
 - [C49] A. Chinea, P. Triverio, S. Grivet-Talocia, "Compact macromodeling of electrically long interconnects," in *Proc. of the 17th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP 2008)*, 2008, (**Best Paper Award**).
 - [C50] P. Triverio, S. Grivet-Talocia and M. Nakhla, "An improved fitting algorithm for parametric macromodeling from tabulated data," in *12th Workshop on Signal Propagation on Interconnects (SPI 2008)*, Avignon, France, May 12-15, 2008.
 - [C51] P. Triverio, M. Nakhla and S. Grivet-Talocia, "Parametric macromodeling of multiport networks from tabulated data," in *16th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP 2007)*, Atlanta, GE, Oct. 29-31, 2007.
 - [C52] P. Triverio and S. Grivet-Talocia, "Causality-constrained interpolation of tabulated frequency responses," in *15th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP 2006)*, Scottsdale, AZ, Oct. 23-25, 2006, pp. 181-184, (**Best Student Paper Award**).
 - [C53] P. Triverio and S. Grivet-Talocia, "On checking causality of bandlimited sampled frequency responses," in *2nd Conference on Ph.D. Research in Microelectronics and Electronics (PRIME)*, Otranto (LE), Italy, June 12-15, 2006, pp. 501-504.
 - [C54] P. Triverio and S. Grivet-Talocia, "A robust causality verification tool for tabulated frequency data," in *10th IEEE Workshop on Signal Propagation on Interconnects, Berlin, Germany*, May 9-12, 2006.
- ▷ **Non-Referred Conferences and Workshops**
- [NC1] E. Fevola, F. Ballarin, L. Jimenez-Juan, P. Triverio, G. Rozza, S. Grivet-Talocia, "An Energy-Based Optimization Framework for Characterization of Patient-Specific Coronary Artery Bypass Grafts," in *Toronto Biomedical Engineering Conference*, Toronto, Canada, May 20 2020.
 - [NC2] Z. Zainib, F. Ballarin, G. Rozza, P. Triverio and L. Jimenez-Juan, "Reduced order methods for parametric optimal flow control in patient-specific coronary bypass grafts: geometrical reconstruction, data assimilation," in *Summer School on Reduced Order Methods in Computational Fluid Dynamics*, Trieste, Italy, July 8-12 2019.
 - [NC3] **F. Condemì** and S. Femes and P. Triverio and L. Jimenez-Juan, "Towards an Early Detection of Coronary Artery Bypass Graft Failure: A Computational Fluid Dynamics Approach Based on CT and 4D-Flow MRI," in *Annual XSeed and EMHSeed Poster Session*, Toronto, ON, June 27 2019.
 - [NC4] **S. Sharma, U. Patel**, and P. Triverio, "An accelerated solver for Maxwell's equations in integral form with application to integrated circuit design," in *36th Southern Ontario Numerical Analysis Day (SONAD)*, Toronto, ON, May 4 2018.
 - [NC5] F. Ballarin, L. Jimenez-Juan, P. Triverio, A. Crean, and G. Rozza, "A reduced-order modelling framework for cardiovascular flows and a representative clinical application to patient-specific aortic coarctation disease," in *SIAM Conference on Uncertainty Quantification*, Lausanne, Switzerland, April 5-8 2016.

- [NC6] **X. Chang, T. Zhou, C. Mao**, A. Crean, L. Jimenez-Juan, P. Triverio, "A Non-Invasive Computational Approach to Assess the Severity of Aortic Coarctation," in *Catapult Innovation Event*, Toronto, Canada, April 27 2016.

▷ **Invention disclosures**

- [ID1] P. Triverio, **U. R. Patel**, "Mom-so: a fast and accurate algorithm to compute the impedance of power cables including for skin, proximity, and ground effects," 2015, (licensed twice to industry).
- [ID2] P. Triverio, **U. R. Patel**, "A fast and accurate technique to compute the series impedance of complex power cables with inclusion of skin and proximity effects," 2013, (licensed twice to industry).

Scholarly
Addresses

▷ **Scholarly addresses**

- [SA1] P. Triverio, "A macromodeling approach to accelerate multiscale EM simulations, with application to metasurface antennas, 3D ICs and power cables," Massachusetts Institute of Technology (MIT), Cambridge, MA, May 8 2019.
- [SA2] P. Triverio, "A macromodeling approach to accelerate multiscale EM simulations, with application to metasurface antennas, 3D ICs and power cables," École Polytechnique Fédérale, Lausanne, Switzerland, Nov 22 2018.
- [SA3] P. Triverio, "A macromodeling approach to accelerate multiscale EM simulations, with application to metasurface antennas, 3D ICs and power cables," IBM Research, Zurich, Switzerland, Nov 21 2018.
- [SA4] P. Triverio, "Accelerating Multiscale FDTD Simulations with Model Order Reduction," University of Applied Sciences Rapperswil, Rapperswil, Switzerland, Nov 20 2018.
- [SA5] P. Triverio and L. Jimenez Juan, "Computer simulations: from designing integrated circuits to understanding the human heart," Skule Lunch & Learn, University of Toronto, Nov 14 2018.
- [SA6] **U. R. Patel** and P. Triverio, "Integral Equation Methods for the Electromagnetic Analysis of Interconnect Networks: State of Art and Recent Advancements," 27th IEEE Conference on Electrical Performance of Electronic Packaging and Systems, Oct 14 2018, (invited tutorial).
- [SA7] P. Triverio, "Fast Electromagnetic Analysis of 3D Interconnects Using a Surface Integral Formulation," 2018 Central PA Signal Integrity Symposium, Penn State Harrisburg, Apr 13 2018, (invited).
- [SA8] P. Triverio, "A Dissipation Theory for FDTD With Application to the Stable Model Order Reduction of FDTD Equations," University of Toronto, Feb 2 2018.
- [SA9] L. Jimenez Juan and P. Triverio, "Coronary artery bypass surgery: can radiologists and engineers together bypass failure?" Medical Imaging for Engineers Workshop, Toronto, August 17 2017.
- [SA10] P. Triverio, "A Dissipation Theory for FDTD With Application to Stable Subgridding and Stable Model Order Reduction of FDTD Equations," Politecnico di Torino, Italy, June 15 2017.
- [SA11] P. Triverio, "What computational engineering can do for industry and society?" IEEE Student Chapter, University of Toronto, November 17 2016.
- [SA12] P. Triverio, "Full-wave Advanced Electromagnetic Surface Analysis using Model Order Reduction," École Polytechnique de Montréal, Strategic Project Grant Meeting, July 12 2016.

- [SA13] P. Triverio, "Skin Effect Modeling in Transmission Lines with Arbitrary Cross-Section, with Application to the Modeling of Power Cables and Integrated Interconnects," Webinar to IBM, October 16 2015.
- [SA14] **C. Williams** and L. Jimenez-Juan and A. Crean and P. Triverio, "Non-Invasive Assessment of Aortic Coarctation Through Computational Fluid Dynamics," Medical Imaging Research TED Talks, Toronto, Canada, June 19 2015.
- [SA15] P. Triverio, "Accelerating the Finite-Difference Time-Domain Method for Maxwell Equations through Model Order Reduction and CFL Limit Extension," International School for Advanced Studies (SISSA), Trieste, Italy, December 16 2014.
- [SA16] P. Triverio, "MoM-SO: a Fast Method for Computing the Impedance of Power and Microelectronic Cables Including Skin, Proximity, and Ground Return Effects," École Polytechnique de Montréal, Montreal, QC, December 5 2014.
- [SA17] P. Triverio, "Accelerating Finite-Difference Time-Domain Simulations beyond the CFL Limit through Model Order Reduction," McGill University, Montreal, QC, December 4 2014.
- [SA18] P. Triverio, "Macromodeling for Signal Integrity and Electromagnetic Compatibility," Blackberry, Waterloo, ON, May 8 2014.
- [SA19] P. Triverio, "MoM-SO: an Efficient Surface Method for Computing the Series Impedance of Power and Microelectronic Cables," University of Waterloo, Waterloo, ON, May 8 2014.
- [SA20] P. Triverio, "Fast Cable Impedance Calculations using MoM-SO," Workshop of Consortium "Electromagnetic transients in future power systems", Trondheim, Norway, September 11 2013.
- [SA21] P. Triverio, "Macromodeling of interconnects in high-speed electronic systems and power grids," SINTEF Energy Research, Trondheim, Norway, September 9 2013.
- [SA22] P. Triverio, "Fundamentals of Macromodeling for Mixed-Domain Designs," IEEE International Workshop on High-Performance Chip, Package and Systems, Ottawa, Canada, 24 November 2012, (invited tutorial).
- [SA23] P. Triverio, "Physical Consistency of Computer Aided Design Models," IMS2012 International Microwave Symposium, Montreal, Canada, 17-22 June 2012, (invited tutorial).
- [SA24] P. Triverio, "Macromodeling for Signal Integrity and Electromagnetic Compatibility," AMD, Markham, Ontario, AMD, Markham, Ontario, May 31st 2012.
- [SA25] P. Triverio, "Model order reduction of electric and electromagnetic systems by system identification," École Polytechnique Fédérale, Lausanne, Switzerland, April 13th 2011.
- [SA26] P. Triverio, "Modeling and Simulation of High-Speed Interconnects by System Identification: Recent Developments and Perspectives," University of Toronto, Toronto, Canada, May 12th 2011.
- [SA27] P. Triverio, "Modeling and Simulation of High-Speed Interconnects: Approaches, Challenges and Solutions - part II," 14th IEEE Workshop on Signal Propagation on Interconnects, Hildesheim, Germany, 9-12 May 2010, (invited tutorial).
- [SA28] P. Triverio, S. Grivet-Talocia, "Identification of Parametric Models with Uniform Stability and Passivity Constraints," XXVI Riunione Nazionale dei Ricercatori di Elettrotecnica, Naples, Italy, 9-11 June 2010.
- [SA29] P. Triverio, "Model order reduction of linear systems via identification: the Vector Fitting method and its recent parametric extensions," Massachusetts Institute of Technology (MIT), Cambridge, MA, Massachusetts Institute of Technology (MIT), Cambridge, MA, December 10th 2010.

- [SA30] P. Triverio, "Modeling and Simulation of Broadband Electronic Systems: the Black-box Identification Approach," Hamburg University of Technology (TUHH), Hamburg, Germany, Hamburg University of Technology (TUHH), Hamburg, Germany, September 17th 2010.
- [SA31] P. Triverio, M. Nakhla, "Fundamentals of Macromodeling for Signal Integrity Analysis," IEEE 18th Conference on Electrical Performance of Electronic Packaging and Systems, Portland, OR, 19–21 October 2009, (invited tutorial).

Funding ▸ **Funded Research Programs as Sole Investigator**

Years	Project Title	Sponsor	Purpose	Amount
2011	Start-up	ECE Dept.	Operating	\$100,000
2012	Frequency-dependent modeling of multi-phase power cables	SINTEF	Operating	\$8,550
2013	Broadband modelling of complex power cables including the effect of ground return	SINTEF	Operating	\$35,000
2013-2018 (5 yrs)	Canada Research Chair in Modeling of Electrical Interconnects	Canada Research Chairs	Operating	\$500,000
2013-2019 (6 yrs)	Advanced Techniques for the Modeling of Electrical Interconnects	NSERC Discovery	Operating	\$150,000
2013	Stochastic models of high-speed interconnects for time-domain analysis	Connaught New Researcher Award	Operating	\$10,000
2013	Interconnects Characterization Facility	CFI Leader's Opportunity Fund	Equipment	\$100,000
2013	Interconnects Characterization Facility	ORF	Equipment	\$100,000
2014-2018 (5 yrs)	Interconnects Characterization Facility	CFI - IOF	Operating	\$30,000
2016 - 2017 (2 yrs)	High-Performance Electromagnetic Solver for 3D Silicon Interposers	AMD	Operating	\$50,000
2016 - 2017 (2 yrs)	High-Performance Electromagnetic Solver for 3D Silicon Interposers	NSERC CRD	Operating	\$71,428
2016 - 2020 (5 yrs)	Fast Simulation Techniques to Tackle the Design Complexity of Future 3D Integrated Circuits and Antennas	Ontario Early Researcher Award	Operating	\$150,000
2018-2023 (5 yrs)	Canada Research Chair in Computational Electromagnetics	Canada Research Chairs	Operating	\$500,000
2018 - 2019 (2 yrs)	A scalable electromagnetic solver for interconnect networks in 3D integrated circuits	AMD	Operating	\$50,000
2018 - 2019 (2 yrs)	A scalable electromagnetic solver for interconnect networks in 3D integrated circuits	NSERC CRD	Operating	\$71,428
2019-2024 (5 yrs)	Taming complexity in computational electromagnetism: a model order reduction approach	NSERC Discovery	Operating	\$165,000

Acronyms:

NSERC: Natural Sciences and Engineering Research Council of Canada

CFI: Canada Foundation for Innovation

ORF: Ontario Research Fund

IOF: Infrastructure Operating Fund

CRD: Collaborative Research and Development Grants

▷ Annual Release of Funds (grants as sole investigator, in thousands of CA\$)

Program	2012	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23
Start-up	100											
SINTEF	8.5	35										
Canada Re- search Chair		100	100	100	100	100	100	100	100	100	100	
NSERC Dis- covery		25	25	25	25	25	25	33	33	33	33	33
Connaught		10										
CFI			100									
ORF			100									
CFI-IOF			6	6	6	6	6					
CRD					35.7	35.7	35.7	35.7				
AMD					25	25	25	25				
Ontario Early Researcher Award					30	30	30	30	30			
Year total	108.5	170	331	131	221.7	221.7	221.7	223.7	163	133	133	33
											Total	2091.3

▷ **Funded Research Programs with Other Investigators**

Years	Role	Project Title	Sponsor	Purpose	Amount
2015	CI +3	Infrastructure for Electromagnetic Compatibility Characterization and Radiation Measurements of Radio-frequency Circuits and Antennas	NSERC RTI	Equipment	\$149,820
2015 (1 yr)	CI +2	Non-Invasive Assessment of Aortic Coarctation through Computational Fluid Dynamics	UofT Medical Imaging Dept. Seed Funds	Operating	\$15,000
2015 - 2018 (3 yrs)	CI +3	Advanced Electromagnetic Surfaces for Next-Generation Communication Systems	NSERC SPG-P	Operating	\$538,400
2016 - 2019 (3 yrs)	CI +10	Toward a Centre in Computational Science & Engineering	UofT FASE Dean's Strategic Fund	Operating	\$193,000
2016 (1 yr)	CI +1	Non-invasive Biomarkers for Coronary Artery Graft Failure: a Computational Fluid Dynamics Approach	UofT Medical Imaging Dept. Seed Funds	Operating	\$15,000
2018- 2019 (2 yrs)	CI +2	Towards an Early Detection of Coronary Artery Bypass Graft Failure: A Computational Fluid Dynamics Approach Based on CT and 4D-Flow MRI	RSNA/UofT Medical Imaging Dept.	Operating	US\$150,000
2018- 2019	PI +2	Towards an Early Detection of Coronary Artery Bypass Graft Failure: A Computational Fluid Dynamics Approach Based on CT and 4D-Flow MRI	Jean & Lauri Hiivala Research Fund for Heart Health	Operating	\$55,000
2018	PI +2	Towards an Early Detection of Coronary Artery Bypass Graft Failure: A Computational Fluid Dynamics Approach Based on CT and 4D-Flow MRI	Private Donor	Operating	\$1,000

Table continues in the next page.

Years	Role	Project Title	Sponsor	Purpose	Amount
2018 - 2021 (3 yrs)	CI +2	Innovative Satellite Antennas for Emerging M2M/IoT Applications	NSERC SPG-P	Operating	\$473,775

Acronyms:

PI: Principal Investigator

CI: Co-investigator

RTI: Research Tools and Instruments Grants Program

UofT: University of Toronto

SPG-P: Strategic Partnerships Grant for Projects

FASE: Faculty of Applied Science and Engineering

RSNA: Radiological Society of North America

▷ **Annual Release of Funds (grants with other investigators, in thousands of CA\$)**

Program	2015	2016	2017	2018	2019	2020	2021
NSERC RTI	150						
Medical Imaging	15	15					
NSERC SPG-P	197	191	150	151	173	151	
Dean's Strategic		53	65	75			
RSNA/Medical Imag.				94	94		
Hiivala Res. Fund				50	5		
Private Donors				1			
Year total	362	259	215	371	272	151	0
						Total	1630

▷ **In-Kind Contributions to Research Programs (selected)**

Years	Project Title	Sponsor	Contribution	Estim. value
2016 - 2017 (2 yrs)	High-Performance Electromagnetic Solver for 3D Silicon Interposers	AMD	Test cases	\$10,000
2018 - 2019 (2 yrs)	A scalable electromagnetic solver for interconnect networks in 3D integrated circuits	AMD	Access to computational resources	\$140,000
2019 - 2020 (1 yr)	Towards an Early Detection of Coronary Artery Bypass Graft Failure using Computational Fluid Dynamics	Compute Canada	Computing resources (190 core years)	\$23,041
2020 - 2021 (1 yr)	Towards an Early Detection of Coronary Artery Bypass Graft Failure using Computational Fluid Dynamics	Compute Canada	Computing resources (163 core years)	\$19,721

Acronyms:

PI: Principal Investigator

CI: Co-investigator

▷ **Funding for Teaching Improvement**

Years	Project Title	Sponsor	Amount
2015	Demonstration kits for electric and electromagnetic phenomena	UofT's Temporary Special Levy Fund	\$10,642

Acronyms:

UofT: University of Toronto

Service

▷ **University Service**

- Distinguished Lecture Series Coordinator, Electrical and Computer Engineering Department, 2017/18
- Graduate Matters Committee, Electrical and Computer Engineering Department, 2017/18, 2019/20
- Graduate Coordinator, Electromagnetics Group, Electrical and Computer Engineering Department, 2013/14 - 2017/18
- Workload Policy Review Committee, Electrical and Computer Engineering Department, 2015

▷ **International Journals (editorial board memberships)**

- Associate Editor, IEEE Transactions of Components, Packaging and Manufacturing Technology, 2018 - present

▷ **International Conferences (committee memberships)**

- Technical Program Committee, IEEE Conference on Electrical Performance of Electronic Packaging and Systems, 2017 - present
- Technical Program Committee, IEEE Workshop on Signal and Power Integrity, 2016 - present
- Chair, Paper Awards Committee, IEEE Conference on Electrical Performance of Electronic Packaging and Systems, 2019
- Technical Program Committee, IEEE International Conference on Signal and Power Integrity, 2016
- Steering Committee, IEEE AP-S Symposium on Antennas and Propagation and URSI CNC/USNC Joint Meeting, 2015
- Technical Program Review Committee, IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave and Terahertz Applications (NEMO), 2015
- Technical Program Committee, IEEE International Workshop on High-performance Chip, Package, and Systems, 2012 - present

▷ **International Conferences (session organizer)**

- Special session on "Multiphysics modeling for Analog/RF/MEMS/optical chip-package-systems", IEEE International Conference on Signal and Power Integrity, 2016
- Special session on "Model Order Reduction", IEEE Workshop on Signal and Power Integrity, 2016
- Special session on "Numerical methods for Signal and Power Integrity", IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave and Terahertz Applications (NEMO), 2015

▷ **Reviewer (grants)**

- NSERC Discovery Grant

▷ **Reviewer (journals)**

- IEEE Transactions on Antennas and Propagation
- IEEE Transactions on Microwave Theory and Techniques
- IEEE Microwave and Wireless Components Letters
- IEEE Transactions on Circuits and Systems
- IEEE Journal of Electromagnetics, RF, and Microwaves in Medicine and Biology

- IEEE Transactions on Electromagnetic Compatibility
- IEEE Transactions on Components, Packaging and Manufacturing Technology
- IEEE Transactions on Power Delivery
- Elsevier Journal of Biomechanics
- Elsevier Journal of Computational Physics
- Elsevier AEÜ International Journal of Electronics and Communications

▷ **Reviewer (conferences)**

- IEEE Workshop on Signal and Power Integrity, 2016 - present
- IEEE Conference on Electrical Performance of Electronic Packaging and Systems, 2016 - present
- IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, 2020
- Joint IEEE International Symposium on Electromagnetic Compatibility and EMC Europe, 2015
- IEEE Symposium on Electromagnetic Compatibility and Signal Integrity, 2015
- Design, Automation and Test in Europe conference (DATE), 2013
- IEEE 11th International NEWCAS Conference, 2013
- International Conference on Computer-Aided Design (ICCAD), 2011

▷ **Thesis and Qualification Exam Committees**

M.A.Sc. thesis proposal committees	12
M.A.Sc. thesis committees as examiner	12
M.A.Sc. thesis committees as chair	6
M.A.Sc.-Ph.D. transfer proposal committees	1
Ph.D. qualification exam committees	27
Ph.D. qualification exam committees (other universities)	1
Ph.D. proposal review committees	8
Ph.D. thesis committees as external appraiser (other universities)	1
Ph.D. thesis committees as examiner	2
Ph.D. thesis committees as chair	4
SGS committees as examiner	8
SGS committees as chair	1
<hr/> Total	<hr/> 83

▷ **Youth Outreach**

- Let's Talk Science Outreach, Toronto, 2017 and 2018
- Ontario Universities' Fair, 2012 and 2013

▷ **Professional Memberships**

- IEEE (Senior Member)
- IEEE Microwave Theory and Techniques Society
- IEEE Antennas and Propagation Society Membership
- IEEE Components, Packaging, and Manufacturing Technology Society
- Professional Engineers of Ontario (2014-present)

Leaves

▷ **Research & Study Leaves (sabbatical year)**

- July 2018 - June 2019

▷ **Parental Leaves**

June - August 2019

September - November 2017

September - November 2016

Toronto, April 1, 2020