

Filippo Capolino - Curriculum Vitae



Professor, IEEE Fellow
Department of Electrical Engineering
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University of California, Irvine

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November, 2019

Employment

- Since July 2017
Full Professor, Department of Electrical Engineering and Computer Science, University of California, Irvine, CA, USA.
Also affiliated with the California Institute for Telecommunications and Information Technology, (Calit2).
- July 2012-2017
Associate Professor, Department of Electrical Engineering and Computer Science, University of California, Irvine, CA, USA.
- July 2008-2012
Assistant Professor, Department of Electrical Engineering and Computer Science, University of California, Irvine, CA, USA.
- Nov. 2010
Visiting Professor (1 month), Centre de Recherche Paul Pascal (CRPP), CNRS and Université de Bordeaux IV, Bordeaux, France
- Nov. 2002 – June 2008
Assistant Professor, Tenured in 2005, Department of Information Engineering, University of Siena, Italy
- Sept. 2003 - 2008
Adjunct Assistant Professor, Department of Electrical and Computer Engineering, University of Houston, TX, USA
- Jan. 2006-Dec. 2006
Visiting Research Assistant Professor, Department of Electrical and Computer Engineering, University of Houston, TX, USA. Sabbatical leave from University of Siena
- Nov. 2003 - Dec. 2003
Visiting Professor, Institut Fresnel, Université de Aix-Marseille III, Marseille, France
- Jan. 2001- Sept. 2002. Also, Jan. 2005 - May 2005.
Visiting Research Assistant Professor, Department of Electrical and Computer Engineering, University of Houston, TX, USA
- March 1999 - Nov. 2002
Research Associate, Department of Information Engineering, University of Siena, Italy
- Sept. 1998 - March 1999
Postdoctoral Researcher, Department of Aerospace and Mechanical Engineering, Boston University, MA, USA
- Sept. 1997 - Feb. 1999
Postdoctoral Researcher, Department of Information Engineering, University of Siena, Italy
- Aug. 1997 - Jan. 1998
Fulbright Research Scholar at Boston University, Department of Aerospace and Mechanical Engineering, Boston, MA, USA

Education

- July 1997
Doctorate Degree, Electrical Engineering, University of Florence, Italy
- March 1993
Laurea degree (110/110 *cum laude*), Electrical Engineering, University of Florence, Italy

Honors and Awards

- **“IEEE Fellow”** Elevated to the IEEE Grade of Fellow, Nov. 2019 for “Contributions to development of electromagnetic phenomena in metamaterials and periodic structures.”
- **“2014 Best Antenna Theory Paper Award,”** at the European Conference on Antennas and Propagation (EUCAP), The Hague, Netherlands, April 2014.
- **“R. P. W. King Prize Paper Award,”** from the *IEEE Antennas and Propagation Society*, given to an author under age 36 for the most outstanding paper published in the *IEEE Transactions on Antennas and Propagation* in 2000 ([J16], see list below)
- **“Raj Mittra Travel Grant” Senior Award** for participating at the *IEEE Internat. AP-S Symposium*, Albuquerque, NM, USA, July 2006.
- **“Certificate of Recognition”** to Filippo Capolino as an Additional Team Member, presented to “Electromagnetics and Plasma Physics ASC Code Developers,” Sandia National Laboratories, NM, for significant and important progress in the development, new applications and transfers of ASC EM and plasma physics codes. March 19, 2007.
- **Co-Author of one of the "Fast Breaking Papers, Oct. 2007"**. Papers that had the highest percentage increase in citations in Essential Science Indicators (ESI, Thomson Scientific), <http://esi-topics.com/fbp/2007/october07-GiampieroLovat.html>
- **“Award from the Italian National Council for Research”** to conduct a research program on radiation from truncated arrays, Boston University, Boston, MA, USA, 1998-99
- **“Fulbright Award”** for a research program on radiation from truncated arrays, conducted at Boston University, Boston, MA, USA, 1997-98
- **“Raj Mittra Travel Grant” Junior Award** for participating at the *IEEE Internat. AP-S Symposium*, Baltimore, MD, USA, July 1996
- **“Premio Barzilai”** Award at the *National Conference on Electromagnetics, RiNEm 96*, Italy, September 1996, best paper for authors under 35
- **“Young Scientist Prize”** *Conference MMET'94 (Mathematical Methods for Electromagnetic Theory)*, Kharkov, Ukraine, 1994. Also, **“Young Scientist Award”** to participate in the *URSI Int. Electromagnetic Theory Symposium*, Thessaloniki, Greece, 1998

Research Interests

Applied electromagnetism; Electromagnetic artificial materials, Metamaterials; Bandgap and plasmonic nanostructures, and their applications in sensors; Nano plasmonics and nano optics, Enhanced RAMAN sensors; Field enhancement for sensing and enhanced nonlinearities; Superlensing; Nanotechnology; Antennas and waveguides; High-directivity antennas (microwaves and optics); Wireless systems at microwaves and millimeter waves; On-chip antennas; Array antennas and miniaturized antennas; New concepts for distributed oscillators and lasers; Electron-beam devices; Imaging techniques and wide band pulses; High-frequency techniques; Diffraction and propagation; Numerical methods.

Funding

Funding to conduct my research activity is shown below. (Only funds active after Sept. 2016 are shown.)

| | FUNDING SOURCE/NUMBER | ROLE | AMOUNT | Start | End |
|----|---|---|---------------|--------------|------------|
| 1) | Air Force, Office of Scientific Research / 271387-870D | Co-PI (PI: A. Figotin) | \$1,780,000 | 10/2012 | 03/2018 |
| 2) | NSF - National Science Foundation / ECCS-1449397 | Co-PI (PI: R. Ragan) | \$1,297,672 | 11/2014 | 10/2018 |
| 3) | Keck Foundation / KF-200923 | PI (Co-PIs: Wickramasinghe, Potma, Apkarian) | \$2,000,000 | 01/2015 | 06/2019 |
| 4) | Air Force, Office of Scientific Research / FA9550-15-1-0280 | Sole PI | \$277,321 | 07/2015 | 07/2018 |
| 5) | NSF - National Science Foundation/ EECS-1711975 | PI (Co-PI: M. Green) | \$380,000 | 08/2017 | 07/2020 |
| 6) | Air Force, Office of Scientific Research / FA9550-18-1-0355 | Sole PI | \$300,000 | 08/2018 | 07/2021 |
| 7) | Northrop Grumman, Gift | Sole PI | \$50,000 | 01/2019 | --- |

Teaching

Department of Electrical Engineering and Computer Science, University of California Irvine, CA, USA (from 2008)

- Undergraduate courses
 - “*Network Analysis I*,” EECS 70A, Spring 2011, Spring 2012
 - “*Network Analysis II*,” EECS 70B, Spring 2010
 - “*Engineering Probability*,” EECS 140, Spring 2009
 - “*Antennas for Wireless Communication Links*,” EECS 144, Winter 2009, W2010, W2011, W2012, W2013, W2014, W2015, W2016, W2017, W2018, F2018, F2019
 - “*Engineering Electromagnetics III*,” EECS 180C, Fall 2013, Fall 2014
- Graduate courses
 - “*Advanced Electromagnetic Engineering I*,” EECS 280A, Fall 2009, Fall 2012
 - “*Advanced Electromagnetic Engineering II*,” EECS 280B, Spring 2011, Spring 2013, Spring 2015, Spring 2017, Spring 2019
 - “*Metamaterials for Optics and Microwaves*,” EECS 298, Fall 2011, Spring 2014, Spring 2016, Spring 2018
 - “*Advanced Electromagnetics and Green’s Functions*,” EECS 298, Fall 2016

Department of Information Engineering, University of Siena, Italy (1993-2008)

- Undergraduate courses
 - “*Electromagnetic Compatibility*,” 50 hr. (Academic years: 2002/03, 2003/04, 2004/05, 2005/06, 2006/07, 2007/08)
 - “*Antennas*,” 50 hr. (Academic years: 1996/97, 1997/98, 1998/99 and 1999/2000)
- Graduate courses
 - “*Optical Components*,” (Academic years: 2003/04, 2004/05, 2005/06, 2006/07, 2007/08)
 - “*Sensors for Remote Sensing*,” (Academic years: 2003/04, 2004/05, 2005/06, 2006/07)
 - “*Physical Systems for the Transmission of the Information*,” 8 hr. University of Florence (Academic year: 2003/04)
 - “*Numerical Solution of Integral Equations*,” 10hr. (Academic years: 2002/03)

- Graduate courses (sections)
 “Antennas” (Academic years 1994/95, 1995/96, and 1996/97)
 “Microwaves” (Academic years 1993/94, 1994/95, 1995/96, 1996/97, and 1999/2000)
 “Electromagnetic fields” (Academic years 1993/94 and 1994/95)
 “Electromagnetic fields II” (Academic years 2002/03, 2003/04)
- Half of an industry course (56 hours total) at the Company Oto Melara SPA, La Spezia, Italy
 “Electromagnetic Compatibility: theory, laboratory, measurements” (Fall 2004)

Department of Electric and Comp. Engineering, University of Houston, TX, USA (2001-2006)

- Graduate course
 “Geometrical Theory of Diffraction (GTD),” ECE 6360, Spring 2001
- Undergraduate courses
 “Applied Electricity and Magnetism,” ECE 2317, Summer 2001, Summer 2002, Spring 2005, Fall 2006
 “Circuits and Systems,” ECE 3364, Spring 2006

Mentoring

University of California Irvine (since July 2008)

- PhD awarded to: Salvatore Campione (PhD 2013), Ali S. Hosseini (PhD 2014), Shiji Pan (PhD 2014), Caner Guclu (PhD 2016), Mohamed K. A. Othman (PhD 2017), Mehdi Veysi (PhD 2017), Mohammad Kamandi (PhD 2019), Mahsa Darvishzadeh (PhD 2019), Ahmad Al-Mutawa (2019)

I am currently mentoring 13 PhD students:

- PhD students advanced to Candidacy: Farshad Yazdi, Dmitry V. Oshmarin, Mohamed Yehia Nada, Hamidreza Kazemi, Mina Hanifeh, Ahmed Farghaly Abdelshafy
- Other PhD students: Tarek Kheder Mealy, Abid Sifat, Robert Marosi, Ehsan Hafezi, Kasra Rouhi, Fatemeh Mohseni, Alireza Nikzamir
- MS awarded: Di Wang (MS 2011), R. G. Kim (MS 2013), Zhou Puxi (MS 2018), Muhannad Alshetaiwi (MS 2018)
- Past postdoctoral fellows: Jinwei Zeng, Mohammad Albooyeh, A. Vallecchi, V. A. Tamma,
- I am also advising research of undergraduate students and hosting high school students for summer research internships

Students’ awards:

- o *Salvatore Campione*, Graduate Student, PhD 2013. (Those in **bold** are very important and very selective)
 - 2011 SPIE Scholarship in Optics and Photonics, May 2011. Awarded to outstanding individuals, based on their potential for long-range contribution to optics and photonics
 - Sigma Xi Grant-in-Aid of Research for a research project entitled project entitled “Use of collective resonances in arrays of plasmonic nanospheres with active gain materials for spectroscopy and imaging applications”. Apr. 2011
 - SPIE Student Travel Grant, sponsored by the Newport Spectra-Physics Research Excellence Travel Awards Program, to attend SPIE Photonics West, San Francisco, CA, USA. Jan. 2011
 - 2012 SPIE Scholarship in Optics and Photonics, May 2012. Awarded to outstanding individuals, based on their potential for long-range contribution to optics and photonics
 - 2011, 2012, 2013 URSI Student Travel Awards (three times), granted by NAS and NSF, to attend the National URSI Symposium at Boulder, CO, USA. Held on Jan. 2011, Jan. 2012, Jan. 2013.
 - FGSA Travel Award for Excellence in Graduate Research, granted by APS (American Physical Society), to attend SPIE Photonics West, San Francisco, CA, USA. 2013
 - **2013 IEEE Photonic Society Graduate Student Fellowship (awarded to 10 each year worldwide)**

- **2013 Marconi Society Paul Baran Young Scholar Award (awarded to only two or three individuals each year worldwide. <http://marconisociety.org/>
<http://www.eng.uci.edu/news/2013/10/engineering-doctoral-student-receives-marconi-young-scholar-award>)**
- o *Caner Guclu*, Graduate Student
 - 2013 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2013
 - 2014 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2014
 - 2015 URSI Student Travel Award, granted by NAS and NSF, to attend the IEEE AP-S Symposium on Antennas and Propagation and URSI CNC/USNC Joint Meeting in Vancouver, BC, Canada, July, 2015.
- o *Mohamed Othman*, Graduate Student
 - 2014 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2014
 - 2015 Pulsed power conference (PPC) Student Travel Grant Award, granted by the US Office of Naval Research (ONR), to attend the IEEE Pulsed Power Conference in Austin, TX, USA, June 2015
 - 2015 URSI Student Travel Award, granted by NAS and NSF, to attend the IEEE AP-S Symposium on Antennas and Propagation and URSI CNC/USNC Joint Meeting in Vancouver, BC, Canada, July, 2015
 - 2016 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2016
- o *Mehdi Veysi*, Graduate Student
 - 2014 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2014
 - 2016 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2016
 - Awarded the Holmes Fellowship, by the Holmes Foundation (2016)
- o *Mahsa Darvishzadeh*, Graduate Student
 - 2018 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2018
- o *Mohammad Kamandi*, Graduate Student
 - 2018 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2018
- o *Ali S. Hosseini*, Graduate Student
 - 2011 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2011
- o *Faezeh Tork Ladani*, Graduate Student
 - 2013 URSI Student Travel Award, granted by NAS and NSF, to attend the National URSI Meeting in Boulder, CO, USA. Jan. 2013
 - Recipient of the one-year fellowship awarded by the Broadcom Foundation (April 2013-March 2014)
- o *Kamalesh Sainath*, Undergraduate Student
 - Campus wide Honors Program (CHP). UCI Undergraduate Research Fellowship (URF) for three quarters

University of Siena (till 2008)

- Two PhD students: G. Donzelli, PhD 2007; A. Della Villa, PhD 2009

- PhD student A. Della Villa has been awarded with the *IEEE Antennas and Propagation Society Graduate Research Award* for 2007-8
- Co-advisor of other PhD students working on high-frequency problems, antennas, and periodic structures
- Advisor of several undergraduate students working towards defending their final thesis (a research work that usually takes 3-5 months)
- Co-Advisor of a PhD student, G. Benelli, under a University of Marseille - University of Siena collaboration
- Postdoctoral fellows: A. Vallecchi, S. Steshenko

University of Houston

- During my visiting appointments in 2001, 2002, 2003, 2005 and 2006, I helped Prof. D. R. Jackson and Prof. D. R. Wilton supervising two PhD students, working on using the Ewald method to accelerate the Green's function computation for periodic structures and working on a new numerical method for arrays

External PhD committees

- Participation on various doctoral final evaluation committees at: Loughborough University, UK; University of Marseille, France; Helsinki University of Technology, Finland; Université Catholique de Louvain, Belgium; University of Udine, Italy; University of Toronto, Canada; Tel Aviv University, Israel; Indian Institute of Technology, Kanpur, India

International Service

- **Chair of the Technical Program Committee (TPC Chair)** for the conference *IEEE International Symp. on Antennas and Propagat.*, San Diego, CA, July 2017
- **Member Technical Program Committee (TPC)**
 - i. *TPC member for the International Vacuum Electronics Conference (IVEC) 2020*, Monterey, CA, USA, April 2020
 - ii. *TPC member for Metamaterials 2019 (13th International Congress on Artificial Materials for Novel Wave Phenomena)*, New York, NY, USA, Sept./Oct. 2020
 - iii. *TPC member for the 2019 IEEE International Symp. on Antennas and Propagation and North America Radio Sci. Meeting.*, Atlanta, GA, July 7-12, 2019
 - iv. *TPC member for Metamaterials 2019 (13th International Congress on Artificial Materials for Novel Wave Phenomena)*, Rome, Italy, Sept. 2019
 - v. *TPC member for Metamaterials 2018, The 12th International Congress on Artificial Materials for Novel Wave Phenomena*, Espoo, Finland, Aug. 27-30, 2018
 - vi. *TPC member for the 2016 IEEE International Symp. on Antennas and Propagation and North America Radio Sci. Meeting.*, Fajardo, Puerto Rico, June 26 - July 1, 2016
 - vii. *TPC member for CLEO (Conference on Lasers and Electro-Optics): QELS – Fundamental Science 03: Metamaterials and Complex Media*, San Jose, CA, USA, 10-15 May 2016
 - viii. *TPC member for the 2015 IEEE International Symp. on Antennas and Propagation and North America Radio Sci. Meeting.*, Vancouver, BC, Canada, 19-24 July, 2015
 - ix. *TPC member for the 2002 IEEE International Symp. on Antennas and Propagation and URSI Symposium*, San Antonio, TX, USA, 16-21 June 2002
 - x. *TPC member for CLEO (Conference on Lasers and Electro-Optics): QELS – Fundamental Science 03: Metamaterials and Complex Media*, San Jose, CA, USA, 10-15 May 2015
 - xi. *TPC member for CLEO (Conference on Lasers and Electro-Optics): QELS – Fundamental Science 03: Metamaterials and Complex Media*, San Jose, CA, USA, 8-13 June 2014
 - xii. *TPC member for CLEO (Conference on Lasers and Electro-Optics): QELS – Fundamental Science 03: Metamaterials and Complex Media*, San Jose, CA, USA, June 2013
- **Steering Committee** for the conference

- i. *Metamaterials 2011 (Fifth International Congress on Advanced Electromagnetic Materials in Microwaves and Optics)*, Barcelona, Spain, Oct. 2011
 - ii. *Metamaterials 2012 (Sixth International Congress on Advanced Electromagnetic Materials in Microwaves and Optics)*, Saint Petersburg, Russia, Oct. 2012
 - iii. *Metamaterials 2013 (Seventh International Congress on Advanced Electromagnetic Materials in Microwaves and Optics)*, Bordeaux, France, Sept. 2013
 - iv. For the same conference I also coordinated the Student Paper Competition for various years
- **Initiator and Coordinator (2004-2009) of the “Consortium of EU PhD Programmes in Metamaterials”.** It is a Consortium involving 23 Universities and a EU geographically distributed School for researchers and PhD students. It continues today and has organized multiple school events every year in European venues since 2004.
 - **Organizer and Instructor**, of the “*II European Doctoral School on Metamaterials*”, Siena, Italy, 21-25 November 2005
 - **Organizer and Instructor**, of the “*XI European Doctoral School on Metamaterials*”, Marrakesh, Morocco, 4-5 May 2008
 - **Associate Editor**, *IEEE Transactions on Antennas and Propagation*, 2002-2008, for two terms. First, in the field of “*Analytical Modelling*” (2002-2004), then in “*Metamaterials*” (2004-2008)
 - **Initiator and Editorial Board of a New Journal: *Metamaterials*.** Together with other colleagues I was a founder and member of the Editorial Board of the new journal published by Elsevier. Started in April 2007-. ISSN: 1873-1988. Now merged with another Elsevier Journal.
 - **Coordinator** of the Siena Unit for the Network of Excellence “Metamorphose” on Metamaterials of the sixth framework program of the European Union and responsible for two Work Packages: a) establish a distributed EU PhD school in metamaterials, b) editing a *Metamaterials Handbook* (2004-2008)
 - **Reviewer for numerous journals**, *IEEE Transaction on Antennas and Propagation*, *IEEE Antennas and Wireless Propagation Letters*, *IEEE Trans. on Microwave Theory and Techniques*, *IEEE Photonics Journal*, *URSI Radio Science*, *Optics Express*, *Optics Letters*, *Optical Materials Express*, *Journal Optical Society of Am. B*, *Applied Physics Letters*, *Physical Review B*, *ACS Photonics*, *Journal of Optics A: Pure and Applied Optics (Institute of Physics)*, *New Journal of Physics*, *Applied Computational EM Society (ACES) Journal*, *Nature Scientific reports*, *Nature Communications*, etc
 - **Organization of Special Sessions at International Conferences**
 - i. “*Excitation and Discontinuities in PBG and Other Periodic Structures*,” for *IEEE APS/URSI Symp.*, Columbus, OH, USA, June 2003
 - ii. “*High-Frequency / Short-Pulse Parameterizations*,” for the 2004 *URSI International Symp. on EM Theory*, Pisa, Italy, May 2004
 - iii. “*Sources and Discontinuities in Metamaterials*,” for *IEEE APS/URSI Symp.*, Washington, DC, USA, July 2005
 - iv. “*Radiation and Scattering of Waves: A Tribute to Professor Leopold B. Felsen*,” for *IEEE APS Symp.*, Albuquerque, NM, USA, July 2006
 - v. “*Numerical Challenges in Modelling Metamaterials*,” for *ACES Conference on Applied Computational Electromagnetics*, Verona, Italy, March 2007
 - vi. “*Quasi-Crystals*,” for *Metamaterials’2007: The First International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, Rome, Italy, October 2007
 - vii. “*Time Domain*,” for *URSI General Assembly*, Chicago, IL, USA, August 2008
 - viii. “*Metamaterials*,” for *URSI General Assembly*, Chicago, IL, USA, August 2008
 - ix. “*Metamaterials*,” for *ICEAA (International Conf. on Electromagnetics and Advanced Appl.)*, Torino, Italy, Sept. 2009
 - x. “*Exotic Phenomena and Homogenization Theory of Metamaterials*,” for *URSI –EMTS (Electromagnetic Theory Symposium)*, Hiroshima, Japan, 20-24 May, 2013

- xi. “*Wave Theory, Electromagnetic Properties and Applications of Composite Nanostructures and Nanomaterials*,” for *URSI –EMTS (Electromagnetic Theory Symposium)*, Hiroshima, Japan, 20-24 May, 2013
 - xii. “*Fabry-Pérot Resonant Cavity Antennas*,” for *URSI –EMTS (Electromagnetic Theory Symposium)*, Hiroshima, Japan, 20-24 May, 2013
 - xiii. “*Advanced Theory & Applications of Metamaterials*,” *URSI National Radio Science Meeting*, Boulder, Colorado, January 4-6, 2017
 - xiv. “*Advanced Theory & Applications of Metamaterials*,” *URSI National Radio Science Meeting*, Boulder, Colorado, January 4-7, 2018
 - xv. “*Novel and Complex Electromagnetic Phenomena and Applications*,” *ICEAA 18, International Conf. on Electromagnetics in Advanced Applications*, Cartagena de Indias, Colombia, September 10-14, 2018
 - xvi. “*Novel and Complex Electromagnetic Phenomena and Applications*,” *ICEAA 19, International Conf. on Electromagnetics in Advanced Applications*, Granada, Spain, September 9-13, 2019
- **Award Committee Member**, “*Raj Mittra Travel Grant*” for participating at the *International IEEE AP-S Symposia*, 2013, 2014, 2015, 2016, 2017, 2018, 2019
 - **Invited talks** at several international conferences. See my conference publications list at the end of this Resume.

UC Irvine Service

- Graduate Advisor (Associate Chair for the EECS Department Graduate Program) (Since July 2015)
- Chair of the HSSOE Graduate Studies Committee (2018-2019)
- Committee Member: HSSoE Executive Committee (2018- 2019)
- Chair of the EECS Department Graduate Student Admission Committee (Since July 2015)
- Committee Member: EECS Department Teaching Assistant (TA) Allocation Committee (2015, 2016)
- Committee Member: EECS Department Graduate Student Admission Committee (Fall 2011-Spring 2015)
- Committee Member: EECS Department “Projecting our future” Committee (2016)
- Served at several PhD dissertation committee. Served at several PhD advancement committees
- Committee Member: Research & Travel Grants Committee (2011, 2012)
- Committee Member for EECS Preliminary Examination of PhD students, giving exams: Spring 2009 (exam for EECS140), Fall 2009 (exam for EECS180), Spring and Fall 2010, 2011, and 2012 (EECS 70B); Spring and Fall 2013, 2014, 2015, 2016, 2017 and 2018 (EECS 180A)
- Chair Committee for EECS Preliminary Examination in Circuits and Devices: Spring and Fall 2010, 2011, 2012, 2013, 2014, and 2015
- Hosted High School students for summer internships (Summer 2011, 2012, 2015)
- Reorganizing some undergraduate classes involving electromagnetic fields (EECS 180 and 187) and I have been the driving force in proposing a new electromagnetic class (EECS180C) for undergraduate students which I have been teaching and coordinating

International Cooperation

Current and past cooperation with several researchers in various countries. People tagged by an asterisk are co-authors of journal or conference publications

Prof. Edl Schamiloglu, University of New Mexico, NM, USA: High power microwave tubes

Dr. I. Brener*, Dr. M. Sinclair*, Dr. T. S. Luk*, Sandia National Labs., USA: Metamaterials

Dr. M. Scalora*, U.S. Army RDECOM, Alabama, USA: Nonlinear metamaterials

Prof. D. R. Wilton*, University of Houston, USA: Numerical modeling. Array antennas

Prof. D. R. Jackson*, University of Houston, USA: Artificial electromagnetic materials
 Prof. J. Chen*, University of Houston, USA: Numerical modeling, FDTD, metamaterials
 Prof. G. Tayeb* and Dr. Stefan Enoch*, Fresnel Institute, France: Artificial electromagnetic materials
 Prof. Albani*, University of Siena, Italy: Diffraction, metamaterials
 Proff. P. Baccarelli*, P. Burghignoli* and G. Lovat*, University of Roma, La Sapienza, Italy: Metamaterials
 Prof. E. Michielssen*, University of Michigan, USA: Time domain Green's functions for TD MoM
 Prof. B. Shanker*, Michigan State University, USA: Time domain Green's functions for TD MoM
 Prof. C. Craeye*, Université Catholique de Louvain, Belgium: Periodic EBG (Electromagnetic BandGap) structures and array antennas. Resolution of magnetic field
 Prof. Y. Vardaxoglou*, Loughborough University, UK: FSS as artificial materials and antennas
 Prof. C. Linton, Loughborough University, UK: Scattering and radiation by truncated periodic structures
 Prof. M. Midrio*, Prof. S. Boscolo*, University of Udine, Italy: EBG materials (waveguides, array antennas)
 Proff. V. Galdi*, University of Sannio, Italy: Quasi periodic electromagnetic structures, PT-symmetry
 Dr. Nigel Johnson*, and Prof. John Arnold, University of Glasgow, UK: Artificial periodic structures
 Dr. L. Basilio*, Dr. W. A. Johnson*, Sandia National Labs., USA: Numerical modeling of optical gratings
 Proff. S. Tretyakov*, C. Simovski*, Helsinki University of Technology, Finland: Metamaterials
 Prof. A. Schuchinsky*, Queen University of Belfast, UK: Metamaterials
 Prof. Ekmel Ozbay*, Bilkent University, Turkey: Metamaterials
 Dr. Maria Kafesaki*, FORTH, Greece: Beaming effects in photonic crystals
 Prof. F. Mesa*, University of Sevilla, Spain: Plasmonic arrays
 Prof. A. B. Yakovlev*, The University of Mississippi, Mississippi, USA: Exceptional points of degeneracy
 Prof. G. Hanson*, University of Wisconsin-Milwaukee, WI, USA: Metamaterials, Exceptional points of degeneracy

Publications (details below)

175 Journal articles [mostly journals published by the *IEEE*, the *Optical Soc. of Am. (OSA)*, and the *Am. Phys. Soc. (APS)*]

400 Conference proceedings, and 15 book chapters

Editor of two books about *Metamaterials*, CRC Press, 2009. Co-author on seven chapters of the two books

Copy of journal and conference publications can be found on the webpage: <http://capolino.eng.uci.edu>

Google Scholar **h-index = 45.**

Thomson Reuters (ISI) Web of Science **h-index = 34.**

Edited Books

EB 1. *Theory and Phenomena of Metamaterials*, Editor: F. Capolino, CRC Press, Boca Raton, FL, 2009. (36 Chapters)

EB 2. *Applications of Metamaterials*, Editor: F. Capolino, CRC Press, Boca Raton, FL, 2009. (32 Chapters)

Articles in peer reviewed journals

J1. F. Capolino, and S. Maci, "Simplified, Closed-Form Expressions for Computing the Generalized Fresnel Integral and Their Application to Vertex Diffraction," *Microwave and Optical Technology Letters*, vol. 9, n.1, pp. 32-37. May 1995.

- J2. F. Capolino, and S. Maci, "Uniform high-frequency description of singly, doubly, and vertex diffracted rays for a plane angular sector," *JEMWA, Journ. EM Waves and Appl.*, V.10, pp. 1175-1197, Oct. 1996.
- J3. M. Albani, F. Capolino, S. Maci, and R. Tiberio, "Diffraction at a thick screen including corrugation on the top face," *IEEE Trans. Antennas and Propagation*, Vol.45, N.2, Febr. 1997.
- J4. F. Capolino, P. Bussotti, L. Borselli, M. Albani, and S. Maci, "Effects of a Fin Edge Close to a Point Caustic of a Gregorian Antenna," *Microwave and Optical Technology Letters*, vol. 14, n.1, pp. 20-23. May 1997.
- J5. F. Capolino, M. Albani, S. Maci, and R. Tiberio, "Diffraction from a couple of coplanar, skew wedges," *IEEE Trans. Antennas and Propagation*, Vol. 45, N.8, Aug. 1997.
- J6. S. Maci, F. Capolino, and F. Mioc, "Line Integral Representation of the Mode Radiation from an Open-ended Waveguide," *IEEE Trans. Antennas and Propagation*, Vol. 45, N.12, pp. 1885-1887, Dec. 1997.
- J7. F. Mioc, F. Capolino, and S. Maci, "An Efficient Formulation for Calculating the Mutual Coupling Between Open Ended Waveguides," *IEEE Trans. Antennas and Propagation*, Vol. 45, N.12, pp. 1887-1889, Dec. 1997.
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- J9. F. Capolino, L. Facheris, D. Giuli, and F. Sottili, "Rainfall Profile Retrieval Through Spaceborne Rain Radars Utilizing a Sea Surface NRCS model," *IEE Proceedings Radar, Sonar and Navigation*, V.146, N.4, Aug. 1998.
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- C 316. M. Darvishzadeh-Varcheie, C. Guclu, R. Ragan, O. Boyraz, and F. Capolino, "Field enhancement with plasmonic nano antennas on silicon-based waveguides," *SPIE Optics + Photonics Conference*, San Diego, CA, 9-13 Aug. 2015.
- C 317. W. Thrift, A. Bhattacharjee, M. Darvishzadeh-Varcheie, Y. Luc, A. Hochbaum, F. Capolino, K. Whiteson, and R. Ragan, "Surface enhanced Raman scattering for detection of Pseudomonas aeruginosa quorum sensing compounds," (*Invited Paper*) - *SPIE Optics + Photonics Conference, Proceedings* Vol. 9550, pp. 95500B-1 to 13, San Diego, CA, 9-13 Aug. 2015.
- C 318. C. Guclu, V.A. Tamma, H. K. Wickramasinghe, and F. Capolino, "Photo-induced magnetic force using nano probes," *SPIE Optics + Photonics Conference*, San Diego, CA, 9-13 Aug. 2015.
- C 319. D. Tihon, C. Craeye, C. Guclu, F. Capolino, and S. Withington, "Orthogonality Properties of Eigenmodes Inside Z-Invariant Periodic Structures," *The 9th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (Metamaterials)*, Oxford, United Kingdom, Sept. 7-12, 2015.
- C 320. M. A. K. Othman, M. Veysi, and F. Capolino, "Theory of Gain Enhancement in Periodic Structures with Degenerate Band Edges," 2016 United States National Committee of URSI National Radio Science Meeting (USNC-URSI NRSRM), Boulder, CO, USA, 6-9 Jan. 2016.
- C 321. M. Veysi, C. Guclu, and F. Capolino, "Focused azimuthally polarized vector beam and its application on artificial optical magnetism," 2016 United States National Committee of URSI National Radio Science Meeting (USNC-URSI NRSRM), Boulder, CO, USA, 6-9 Jan. 2016.
- C 322. M.A.K. Othman, M. Veysi, A. Figotin, and F. Capolino, "Degenerate Band Edge Electron Beam Oscillators: Low Starting Current," *17th IEEE Intern. Vacuum Electronics Conference (IVEC 2016)*, Monterey, California, April 19-21, 2016.
- C 323. C. Guclu, M. Veysi, M. Darvishzadeh-Varcheie, F. Capolino, "Artificial Magnetism via Nano Antennas Under Azimuthally Polarized Vector Beam Illumination," *Proceedings of 2016 Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA, USA, 5-10 June 2016.
- C 324. F. Capolino, "Photo-induced nano magnetism: field enhancement contrast and forces," **Invited Talk**, *Nanoplasm 2016 - Frontiers in Plasmonics and NanoOptics, Int. Conf. on Plasmonics and NanoOptics*, Cetraro (CS) – Italy, 13-17 June 2016.
- C 325. M. Veysi, C. Guclu, F. Capolino, Y. Rahmat-Samii, "Reflectarrays Creating Orbital-Angular-Momentum Circularly Polarized Conical-Beams for Mobile Satellite Communication Systems", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.
- C 326. M. Veysi, M. A. K. Othman, and F. Capolino, "Time Domain Analysis of Coupled-Waveguides with Modal Degeneracies and Gain", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.
- C 327. M. Veysi, M. A. K. Othman, A. Figotin, and F. Capolino, "Super Synchronous Operation of Traveling Wave Tubes Based on Band Edge Degeneracy", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.
- C 328. A. Hosseini, A. Almutawa, D. R. Jackson, and F. Capolino, "V-band Wideband Fabry-Pérot Cavity Antenna made of Thick Partially-Reflective Surface", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.
- C 329. A. Hosseini, F. De Flaviis, and F. Capolino, "V-band Planar Single-layer Circularly-Polarized Fabry-Pérot Cavity Antennas", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.

- C 330. A. Hosseini, S. Kabiri, E. Kornaros, F. De Flaviis, and F. Capolino, "High-gain Single-layer Radial Line Slot Array Designed for V-band applications", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.
- C 331. M. A. K. Othman, A. Figotin and F. Capolino, "Super Synchronous Operation of Traveling Wave Tubes Based on Band Edge Degeneracy", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016.
- C 332. M. A. K. Othman, and F. Capolino, "Parity-Time Symmetry in Chain of Scatterers", *IEEE Internat. Symp. on Antennas and Propagat./USNC-URSI National Radio Science meeting*, Fajardo, Puerto Rico, June 26 - July 1, 2016. **[Invited Talk to a special session, Novel Paradigms, Challenges, Perspectives in Wave Scattering & Propagation]**
- C 333. M. A. K. Othman, F. Yazdi, and F. Capolino, "Exceptional Points of Degeneracy in Coupled-Mode Periodic Structures," *URSI International Symposium on Electromagnetic Theory (EMTS)*, Espoo, Finland, August 14-18, 2016.
- C 334. M. A. K. Othman and F. Capolino, "Coupled Waveguides with Exceptional Points of Degeneracies", *SPIE NanoScience + Engineering (OP16N), Optics + Photonics*, San Diego, California Aug. 28 – Sept. 1, 2016. **[Invited Talk to a special session, Non-Hermitian Photonics]**
- C 335. M. Kamandi, C. Guclu, and F. Capolino, "Giant field enhancement in anisotropic epsilon-near-zero films," *SPIE NanoScience + Engineering, Optics + Photonics*, San Diego, California Aug. 28 – Sept. 1, 2016.
- C 336. M. Darvishzadeh-Varcheie, C. Guclu, and F. Capolino, "Magnetic nanoantennas for magnetic near-field enhancement," *SPIE NanoScience + Engineering, Optics + Photonics*, San Diego, California Aug. 28 – Sept. 1, 2016.
- C 337. M. A. K. Othman, and F. Capolino, "Theory of Coupled Waveguides with Modal Degeneracies and Gain", *Metamaterials '2016. The 10th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, Crete, Sept. 17-22, 2016.
- C 338. C. Guclu, M. Veysi, M. Darvishzadeh-Varcheie, and F. Capolino, "Optical Nanoantennas As Magnetic Nanoprobes For Enhancing Light-Matter Interaction", *Metamaterials '2016. The 10th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, Crete, Sept. 17-22, 2016.
- C 339. F. Capolino et al., "Novel concept of exceptional point of degeneracy for oscillators and other devices," *IEEE coastal Los Angeles section technical symposium (CLASTECH)*, Los Angeles, CA, October 28th, 2016. **[Invited Talk]**
- C 340. M. A. K. Othman, M. Veysi, F. Yazdi, M. Nada, D. Oshmarin, A. Figotin, and F. Capolino, "Multimodal Waveguides with Exceptional Points of Degeneracy of Various Orders," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2017. **[Invited Talk to a special session, Advanced Analysis, Design, and Applications of Waveguiding Structures]**
- C 341. M. A. K. Othman and F. Capolino, "Theory of Exceptional Points of Degeneracy in Coupled Waveguides with Balanced Gain and Loss," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2017.
- C 342. M. Kamandi, C. Guclu, and F. Capolino, "Giant Field and Radiative Emission Enhancement in Anisotropic Epsilon-Near-Zero Slabs," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2017.
- C 343. M. Veysi, C. Guclu, M. Darvishzadeh-Varcheie, F. Capolino, "Magnetic Nanoantennas Excited by Azimuthally Polarized Beams," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2017.
- C 344. M. A. K. Othman, A. Figotin, F. Capolino, "Efficient Generation of High Power Microwaves Using Degenerate Band Edge Oscillators," *IEEE Internat. Conf. on Plasma Science (ICOPS)*, Atlantic City, NJ, May 21-25, 2017. **[Plenary Talk]**
- C 345. Jinwei Zeng, M. Kamandi, M. Darvishzadeh-Varcheie, M. Hanifeh, M. Rajaei, M. Albooyeh, M. Veysi, E. Potma, H. K. Wickramasinghe, and F. Capolino, "Plasmonic nanoprobes enabling photoinduced magnetic and chiral force microscopy," *Plasmonica*, Lecce, Italy, 5-7 July 2017.
- C 346. M. Albooyeh, M. Hanifeh, M. Kamandi, M. Rajaei, J. Zeng, H. K. Wickramasinghe, and F. Capolino, "Photo-induced force vs power in chiral scatterers," *2017 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 347. M. Albooyeh, H. Kazemi, F. Capolino, Do-Hoon Kwon, and S. Tretyakov, "Normal vs Tangential Polarizations in Metasurfaces," *2017 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 348. M. Safari, A. Abdolali, H. Kazemi, M. Albooyeh, M. Veysi, and F. Capolino, "Cylindrical Metasurfaces for exotic electromagnetic wave manipulations," *2017 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 349. M.A.K. Othman, and F. Capolino, "Coupled Transmission Line Array Antennas with Exceptional Points of Degeneracy," *2017 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 350. M. A. K. Othman, X. Pan, G. Atmatzakis, C. Christodoulou, and F. Capolino "Experimental Verification of Degenerate Band Edge Dispersion in Metallic Waveguides," *2017 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 351. F. Yazdi, M. A. K. Othman, M. Veysi, A. Figotin, and F. Capolino, "Third Order Modal Degeneracy in Waveguides: Features and Application in Amplifiers," *USNC-URSI Radio Science Meeting*, San Diego, CA, 9-14 July, 2017. **[Invited Talk to a special session, Theory and Application of Guided Waves]**

- C 352. M. Veysi, M. A. K. Othman, H. Kazemi, and Filippo Capolino, "Time Variant induced non-reciprocity enhanced by exceptional points of degeneracy," *USNC-URSI Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 353. H. Kazemi, M. Veysi, M. A. K. Othman, and F. Capolino, "Improving Absorption Using Time-Variant Electromagnetic Systems," *USNC-URSI Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 354. A. Almutawa, A. Hosseini, F. Capolino, and D.R. Jackson, "Leaky-mode Analysis of Wideband Fabry-Pérot Cavity Antennas," *USNC-URSI Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 355. A. Hosseini, A. Almutawa, F. Capolino, and D.R. Jackson, "Wideband Single-layer Fabry-Pérot Cavity Antenna with a Radial Variation of the Cavity Permittivity," *2017 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 356. D. Oshmarin, M. A. K. Othman, and F. Capolino, "Microwave Pulse Compression Devices with Modal Degeneracy," *USNC-URSI Radio Science Meeting*, San Diego, CA, 9-14 July, 2017.
- C 357. Jinwei Zeng, M. Rajaei, M. Darvishzadeh, M. Albooyeh, B. Albee, H. K. Wickramasinghe, E. O. Potma, and F. Capolino, "Characterization of Si-disk magnetic nanoprobe by photoinduced force microscopy," *SPIE Optics+Photonics*, San Diego, CA, 8-10 Aug., 2017.
- C 358. M. A. K. Othman, M. Y. Nada, M. Veysi, A. Figotin, F. Capolino, "Low-threshold lasing in coupled resonator optical waveguides with exceptional points of degeneracy," *SPIE Optics+Photonics*, San Diego, CA, 8-10 Aug., 2017. **[Invited Talk]**
- C 359. W. Thrift, R. Ragan, M. Darvishzadeh-Varcheie, and F. Capolino, "Electrohydrodynamic flow as a driving force for the directed chemical assembly of plasmonic meta-molecules," *SPIE Optics+Photonics*, San Diego, CA, 8-10 Aug., 2017.
- C 360. Jinwei Zeng, Fei Huang, C. Guclu, M. Veysi, H. K. Wickramasinghe, and F. Capolino, "Sharply focused azimuthally polarized beam characterized by photoinduced force microscopy," *SPIE Optics+Photonics*, San Diego, CA, 8-10 Aug., 2017.
- C 361. C. Nguyen, W. Thrift, Q. Zhao, M. Darvishzadeh-Varcheie, A. Bhattacharjee, A. I. Hochbaum, F. Capolino, O. Boyraz, and R. Ragan, "Novel approaches towards practical applications of CMOS-compatible integrated surface enhanced Raman scattering sensors," *SPIE Optics+Photonics*, San Diego, CA, 8-10 Aug., 2017.
- C 362. S. Tretyakov, D.-H. Kwon, M. Albooyeh, and F. Capolino, "Functional Metasurfaces: Do We Need Normal Polarizations?" *XXXIInd International Union of Radio Science URSI General Assembly and Scientific Symposium*, Montreal, Canada, Aug. 19-26, 2017. **[Invited Talk to a special session, Metasurface Engineering]**
- C 363. M. Othman, F. Capolino, "Theory and Applications of Exceptional Points of Degeneracies in Gain and Loss Balanced Devices," *XXXIInd International Union of Radio Science URSI General Assembly and Scientific Symposium*, Montreal, Canada, Aug. 19-26, 2017.
- C 364. M. Albooyeh, M. D. Varcheie, M. Kamandi, M. Hanifeh, M. Veysi, F. Capolino, "Structured Light to Reveal Nanoscale Magnetism and Chirality," *XXXIInd International Union of Radio Science URSI General Assembly and Scientific Symposium*, Montreal, Canada, Aug. 19-26, 2017. **[Invited Talk to a special session, Small Antennas from Nano to Macro Scales]**
- C 365. J. Zeng, M. Albooyeh, M. Darvishzadeh-Varcheie, M. Kamandi, M. Veysi, M. Hanifeh, M. Rajaei, B. Albee, E. O. Potma, H. K. Wickramasinghe, and F. Capolino, "Unveiling Magnetic and Chiral Nanoscale Properties Using Structured Light and Nanoantennas," *Metamaterials 2017, The 11th International Congress on Artificial Materials for Novel Wave Phenomena*, pp. 391 – 393, Marseille, France, Aug. 28-31, 2017.
- C 366. M. A. K. Othman, M. Veysi, F. Yazdi, M. Y. Nada, A. F. Abdelshafy, A. Figotin, and F. Capolino, "Exceptional Points of Degeneracy in Coupled Modes: Theory and Applications," *Metamaterials 2017, The 11th International Congress on Artificial Materials for Novel Wave Phenomena*, Marseille, France, Aug. 28-31, 2017. **[Invited Talk]**
- C 367. C. Nguyen, W. J. Thrift, A. Bhattacharjee, M. Darvishzadeh-Varcheie, F. capolino, A. Hochbaum, R. Ragan, "Self-assembled plasmonic nanogaps: Enabling early detection of biofilm formation," *2017 IEEE SENSORS*, Glasgow, UK, 29 Oct.-1 Nov. 2017. DOI: 10.1109/ICSENS.2017.8234376
- C 368. H. Kazemi Varnamkhashti, M. Albooyeh, and F. Capolino, "Gradient Metasurfaces as Perfect Polarization transformer," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2018.
- C 369. M. Darvishzadeh Varcheie, F. Capolino, "Two-Scale Concept for Field Enhancement at Optical Frequency: Combination of Rayleigh Anomaly and Plasmonic Resonances," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2018.
- C 370. M. A. K. Othman, and F. Capolino, "New Paradigm in Coherent Radiating Oscillators Based on Waveguides with Exceptional Points of Degeneracy," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2018. **[Invited Talk to a special session, Advanced Analysis, Design & Applications of Waveguiding Structures]**
- C 371. M. Kamandi, M. Albooyeh, and F. Capolino, "Detection and Characterization of Chiral Nano-Samples Using Photo-Induced Force," *URSI National Radio Science Meeting (NRSM)*, Boulder, CO, Jan. 4-7, 2018.
- C 372. M. Y. Nada, M. A. K. Othman, and F. Capolino, "High order exceptional points of degeneracy in coupled resonators optical waveguides," *SPIE Photonics West 2018*, San Francisco, CA, Jan. 27- Feb. 1, 2018.
- C 373. M. Rajaei, J. Zeng, M. Albooyeh, M. Kamandi, M. Hanifeh, F. Capolino, H. K. Wickramasinghe, "Enabling giant circular dichroism by plasmonic graded-height split-rings," *SPIE Photonics West 2018*, San Francisco, CA, Jan. 27- Feb. 1, 2018.

- C 374. M. Albooyeh, J. Zeng, M. Hanifeh, M. Darvishzadeh-Varcheie, M. Kamandi, M. Rajaei, H. K. Wickramasinghe, F. Capolino, "On the confusions in the classification of chirality for 2D material," *SPIE Photonics West 2018*, San Francisco, CA, Jan. 27- Feb. 1, 2018.
- C 375. M. Kamandi, M. Albooyeh, J. Zeng, M. Rajaei, C. Guclu, H. K. Wickramasinghe, F. Capolino, "Nanoscale chirality detection using photo-induced force microscopy," *SPIE Photonics West 2018*, San Francisco, CA, Jan. 27- Feb. 1, 2018.
- C 376. J. Zeng, M. Darvishzadeh-Varcheie, M. Rajaei, M. Albooyeh, E. Potma, F. Capolino, H. K. Wickramasinghe, "Probing magnetic nanoprobe in structured light by a subtle soft touch," *SPIE Photonics West 2018*, San Francisco, CA, Jan. 27- Feb. 1, 2018.
- C 377. F. Capolino et al., "Field Enhancement with Two-Scale Fabrication Methods—Plasmonic Resonances Combined with Rayleigh Anomaly and Modes," *MRS 2018, Material Research Society Spring Meeting*, Phoenix, Arizona, April 2–6, 2018. **[Invited Talk]**
- C 378. M. A. K. Othman, A. F. Abdelshafy, A. Figotin, and F. Capolino, "Exceptional points of degeneracy for enhanced interaction in multimode electron beam devices," *IEEE International Vacuum Electronics Conference*, Monterey, California, April 24-26, 2018.
- C 379. M. Y. Nada, M. A. Othman, F. Capolino, "Exceptional Points of Degeneracy in Lossless Periodic Coupled Waveguides," *Proceedings of 2018 Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA, USA, 13-18 May 2018.
- C 380. Q. Zhao, M. W. Khan, P. Sadri-Moshkenani, R. Ragan, F. Capolino, O. Boyraz, "Demonstration of a Plasmothermomechanical Radiation Detector with Si₃N₄ Waveguide Optical Readout Circuit," *Proceedings of 2018 Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA, USA, 13-18 May 2018.
- C 381. M. Rajaei, M. Kamandi, M. Albooyeh, M. Hanifeh, F. Capolino, H. K. Wickramasinghe, "Nanoscale Field Mapping of Interfering Beams from Nomarski Prism Using Photo-Induced Force Microscopy," *Proceedings of 2018 Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA, USA, 13-18 May 2018.
- C 382. M. Kamandi, M. Albooyeh, M. Rajaei, J. Zeng, C. Guclu, M. Veysi, H. K. Wickramasinghe, F. Capolino, "Enantio-specific Detection of Chirality at Nanoscale Using Photo-induced Force," *Proceedings of 2018 Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA, USA, 13-18 May 2018.
- C 383. Mahsa Darvishzadeh Varcheie, W. J. Thrift, M. Kamandi, R. Ragan, F. Capolino, "Electric Field Enhancement by Two-scale Structure," *Proceedings of 2018 Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA, USA, 13-18 May 2018.
- C 384. F. Capolino et al., "Exceptional Points of Degeneracy in Coupled Mode Systems: Theory and Applications," *Int. Conf. Nanoplasm, New Frontiers in Plasmonics and Nano-photonics*, Cetraro, Italy, June 11-14, 2018. **[Invited Talk]**
- C 385. MA Vincenti, M Kamandi, D de Ceglia, C Guclu, M. Scalora, F. Capolino, "Nonlinear dynamics of anisotropic epsilon-near-zero materials," *Nonlinear Photonics, Advanced Photonics Congress*, Zürich, Switzerland, 2-5 July 2018.
- C 386. F. Capolino et al., "Achieving Giant Electric Field Enhancement: Introducing Longitudinal Epsilon-Near Zero and Two-scale Structures for spectroscopy," *Plasmonica*, Florence, Italy, July 4-6, 2018
- C 387. H. Mohamad, T. Zheng, M. Casaletti, Z. Ren, A. F. Abdelshafy, F. Capolino, Guido Valerio, "Degenerate Band Edge Condition in Substrate-Integrated Waveguides," *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018.
- C 388. A. Almutawa, M. Kamandi, H. Kazemi, M. Darvishzadeh-Varcheie, F. Capolino, "Utilizing Extremely Thin High Impedance Surfaces as Antennas." *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018.
- C 389. M. Y. Nada, M. Othman, F. Yazdi, D. Oshmarin, A. F. Abdelshafy, F. Capolino, "Unique Charactersitics and Applications of Systems With Exceptional Points of Degeneracy," *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018. **[Invited Talk to a special session, Functional Material Platforms Enabling Exotic Scattering Phenomena]**
- C 390. M. Camacho, A. P. Hibbins, F. Capolino, M. Albani, "Wiener-Hopf analysis of the scattering by a two dimensional periodic semi-infinite array of dipoles," *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018.
- C 391. A. F. Abdelshafy, M. Othman, D. Oshmarin, M. Y. Nada, F. Capolino, "Exceptional Points of Degeneracy in a Linear Array Oscillator with Gain and Loss Balance," *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018.
- C 392. A. Almutawa, F. Capolino, D. R. Jackson, "Power Bandwidth Analysis of Planar Fabry-Pérot Cavity Antennas," *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018.
- C 393. T. Mealy, M. Y. Nada, F. Capolino, "Realization of Fourth Order Exceptional Points of Degeneracy in Uniform Coupled-Waveguides," *2018 IEEE Internat. Symp. on Antennas and Propagat. & USNC/URSI National Radio Science Meeting*, Boston, MA, 8-13 July, 2018.
- C 394. M. Y. Nada, A. F. Abdelshafy, T. Mealy, F. Capolino, "Exceptional points of degeneracy in coupled mode structures: theory and applications," *SPIE Optics + Photonics (International Society for Optics and Photonics)*, San Diego, CA, Aug. 19-23, 2018. **[Invited talk]**

- C 395. M. Y. Nada, A. F. Abdelshafy, T. Mealy, F. Capolino, “General conditions to realize exceptional points of degeneracy and applications,” *International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (Metamaterials’2018)*, Espoo, Finland, August 27–September 1, 2018. **[Invited talk]**
- C 396. M. Y. Nada, A. F. Abdelshafy, T. Mealy, F. Yazdi, H. Kazemi, A. Figotin, F. Capolino, “Various Topologies of Coupled-mode Structures Exhibiting Exceptional Points of Degeneracy,” *IEEE International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Cartagena de Indias, Colombia, Sept. 10–14, 2018.
- C 397. A.T. Almutawa, H. Kazemi, F. Capolino, “Analyze and Design of Thin Planar High Impedance Surface as an Antenna,” *IEEE International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Cartagena de Indias, Colombia, Sept. 10–14, 2018. **[Invited talk]**