

Francesco Monticone

Assistant Professor of Electrical and Computer Engineering (Tenure-Track)

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Summary of Research Interests and Accomplishments

Dr. Monticone's current research interests are in the areas of **applied electromagnetics, metamaterials, plasmonics, and nanophotonics**, with particular focus on innovative and extreme aspects of wave interaction with engineered materials and nano-structures. In these areas, Dr. Monticone's research group at Cornell University has been working on a broad range of topics including *extreme scattering engineering, cloaking and invisibility, nanoparticles, nanocircuits, nanoantennas, non-Hermitian electromagnetic systems, advanced metasurfaces, and topological electromagnetics/phonics*. An important theme of his research has been the translation of well-established methods and concepts from microwave/antenna engineering and circuit theory to the realm of optics, photonics, and nanotechnology, and vice versa.

Dr. Monticone has authored and co-authored more than **100 scientific contributions** in peer-reviewed journal papers, book chapters, and peer-reviewed conference proceedings, receiving more than 2400 citations, and has given over 20 invited talks and seminars. His papers have appeared in several high-impact journals, including Physical Review Letters (three times selected as "Editor's Suggestion"), Nature Nanotechnology, Proceedings of the IEEE, Optica, and Science. He received the U.S. Air Force Office of Scientific Research (AFOSR) **Young Investigator Program Award (YIP)** in 2018. Some of his research work has been picked up by national and international media outlets, such as BBC, NBC News, The Huffington Post, and Time Magazine. Dr. Monticone is a member of the IEEE, the American Physical Society (APS), the Optical Society of America (OSA), and a full member of the International Union of Radio Science (URSI).

Education

- SEPT 2011 - DEC 2016 **PhD degree** in Electrical and Computer Engineering.
The University of Texas at Austin, Austin, TX
- Advisor: Prof. Andrea Alù.
 - PhD Dissertation: *Scattering Engineering at the Extreme with Metamaterials, Metasurfaces and Nanostructures*, Oct. 2016.
- 2009 - 2011 **Master of Science degree** (*Laurea Specialistica* degree) in Electronics Engineering.
Politecnico di Torino, Torino, Italy
- Summa cum laude and honors (110/110 e lode).
 - Thesis in Applied Electromagnetics: *Theoretical analysis and design of a conformal electromagnetic cloak based on periodically-modulated microstrip lines on a flexible polymeric shell*.
 - Advisor: Prof. Mario Orefice, Co-advisor: Prof. Ladislau Matekovits.
- 2005 - 2009 **Bachelor of Science degree** (*Laurea* degree) in Electronics Engineering.
Politecnico di Torino, Torino, Italy
- Thesis in Applied Electromagnetics: *Design and analysis of width-modulated microstrip line based high impedance surfaces*.
 - Advisor: Prof. Ladislau Matekovits.

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Professional Experience

JAN 2017 -
PRESENT

Assistant Professor (tenure-track)

Cornell University, Ithaca, NY
School of Electrical and Computer Engineering

I lead a [research group](#) that investigates – theoretically, numerically and experimentally – innovative and extreme aspects of wave interaction with engineered metamaterials, topological materials, and nano-structures. I teach undergraduate and graduate courses on intermediate and advanced electrodynamics, metamaterials, and theoretical nanophotonics.

SEPT 2011 -
DEC 2016

Graduate Research Assistant

The University of Texas at Austin, Austin, TX
Metamaterials and Plasmonics Research Laboratory

- Advisor: [Prof. Andrea Alù](#)
- Research activity: Scattering engineering at the extreme with metamaterials and plasmonics; fundamental physical bounds in electromagnetism and photonics; active, nonlinear, nonreciprocal, nonlocal, and multi-physics metamaterial and metasurface devices; wave-based analog computing and image processing with metasurfaces; RF antennas and microwave circuits and components.

SEPT 2015 -
DEC 2015

Visiting Student Researcher

FOM Institute AMOLF, Amsterdam, The Netherlands
Resonant Nanophotonics Group

- Supervisors: [Prof. Andrea Alù](#), [Prof. Femius Koenderink](#).
- Research activity: Light trapping in the radiation continuum; invisible cloaked sensors for near-field imaging; interaction of metamaterials and metasurfaces with electron beams; circuit models for hybrid nano-antennas.

JULY 2010 -
OCT 2010

Visiting Student Researcher

Macquarie University, Sydney, Australia
Centre for Electromagnetic and Antenna Engineering (CELANE)

- Supervisors: [Prof. Mario Orefice](#), [Prof. Ladislau Matekovits](#) and [Prof. Karu Esselle](#).
- Research activity: Electromagnetic band-gap materials; Broadband cloaking devices working in the microwave/millimeter-wave range.

2009 - 2011

Research Assistant

Politecnico di Torino, Torino, Italy
Applied Electromagnetics Group

- Supervisors: [Prof. Mario Orefice](#), [Prof. Ladislau Matekovits](#).
- Research activity: Electromagnetic band-gap materials and high-impedance metasurfaces.

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Teaching Experience

SPRING 2018, SPRING 2019 **Instructor** – ECE 5970: “Molding Light Flow: Advanced Electrodynamics of Complex Media”

Cornell University, Ithaca, NY
School of Electrical and Computer Engineering

New graduate-level course on advanced topics in applied electrodynamics, meta-materials, and nanophotonics. Topics include wave propagation in complex media (anisotropic, chiral, gyrotropic, etc.); causality, energy conservation, reciprocity theorems; optical forces; spatial dispersion and nonlocality; wave propagation in periodic structures; coupled-mode theory; Berry phase, Berry connection, and Chern number. The course also introduces several topics at the forefront of research, including nonreciprocal electromagnetics and topological photonics.

FALL 2017, FALL 2018 **Instructor** – ECE 4380 / AEP 4450: “Electromagnetic and Optical Metamaterials”

Cornell University, Ithaca, NY
School of Electrical and Computer Engineering

New introductory senior-level course on electromagnetic/optical metamaterials. The course introduces the electromagnetic and optical properties of plasmonic materials, artificial magnetic materials, negative-index materials, nano-structured optical materials, etc. The course also discusses the applications of these engineered materials in diverse areas, including electromagnetic cloaking and invisibility, super-resolution imaging, bio-chemical sensing, conformal optics, and non-reciprocal devices.

2014 - 2016 **Occasional Lecturer** - -EE 325: “Electromagnetic Engineering” and EE 383N: “Theory of Electromagnetic Fields: Electrodynamics”

The University of Texas at Austin, Austin, TX
Department of Electrical and Computer Engineering

Lectures on vector calculus, electrostatics, magnetostatics, electromagnetic theory, and scattering theory. Problem solving sessions.

2013 **Teaching Assistant** – EE 383P-6: “Optoelectronic Devices”

The University of Texas at Austin, Austin, TX
Department of Electrical and Computer Engineering

Tutored students on solid-state physics, optics, and electronics. Office hour assistance to students. Organized additional one-to-one sessions for students in need of further assistance. Graded homework, student presentations, and exams.

Service and Professional Leadership

Editor and Reviewer Activities

- **Active peer reviewer** for the journals *Optica*, *Nature Photonics*, *Nature Communications*, *Physical Review Letters*, *Physical Review Applied*, *Physical Review A*, *Physical Review B*, *ACS Photonics*, *ACS Nano*, *Nano Letters*, *Optics Express*, *Optical Material Express*, *Optics Letters*, *Applied Optics*, *Journal of Optics*, *Applied Physics Letters*, *Scientific Reports*, *Journal of Applied Physics*, *IEEE Antennas and Wireless Propagation Letters*, *IEEE Journal on Multiscale and Multiphysics Computational Techniques*, *IEEE Transactions on Antennas and Propagation* and several international conferences.
- **NSF Reviewer and Panelist**. National Science Foundation, Directorate of Engineering.
- **Reviewer** of grant proposals, for US Department of Defense (DoD) funding agencies.

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Cornell Committees and Responsibilities

- **Member of faculty search committee** – School of Electrical and Computer Engineering.
- **Chair of qualifying examination committee** – Qual Exam on Electromagnetics & Optics (2018); Qual Exam on Solid State / Quantum (2017).
- **First-year faculty advisor** for 22 engineering freshmen students (2017-2019).
- **Member of the graduate special committee** of four PhD students in the School of Electrical and Computer Engineering and the School of Applied and Engineering Physics.

Other Academic Committees and Responsibilities

- **Member of the graduate special committee** of a PhD student at Clarkson University.

Professional Society Memberships

- Member, Institute of Electrical and Electronics Engineers (**IEEE**) (2009 - present).
- Member, IEEE Antennas and Propagation Society (**IEEE AP-S**) (2012 - present).
- Member, IEEE Photonics Society (**IEEE IPS**) (2013 - present).
- Member, American Physical Society (**APS**) (2011 - present).
- Member, Optical Society of America (**OSA**) (2013 - present).
- Member, Virtual Institute for Artificial Electromagnetic Materials and Metamaterials (2015 - present).
- Full Member, International Union of Radio Science (**URSI**), Commission B (Fields and Waves) (2017 - present).

Professional Service and Leadership

- **Chair of Awards Committee** (2019). International Congress on Engineered Material Platforms for Novel Wave Phenomena - Metamaterials'2019.
- **Member of the steering committee** (since September 2017). International Congress on Engineered Material Platforms for Novel Wave Phenomena - Metamaterials'.
- **Sponsors and exhibitors organizer** (2015, 2016, 2017). International Congress on Engineered Material Platforms for Novel Wave Phenomena - Metamaterials'.
- **Organizer** of the special session “Topological Electromagnetics,” at the 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting.
- **Session chair** at international conferences: *IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, *MRS (Materials Research Society) Fall Meeting*, *SPIE Photonics West*.

Selected Scientific Honors, Awards, and Recognitions

- 2018 **AFOSR Young Investigator Program Award (YIP)**
US Air Force Office of Scientific Research (AFOSR).
- 2017 **Inaugural Margarida Jacome Dissertation Award**
Awarded by the University of Texas at Austin, Department of Electrical and Computer Engineering.
- 2017 **Elected Full Member of URSI**
International Union of Radio Science (URSI), Commission B (Fields and Waves).
Membership is by nomination only. “Member nominees should have evidence of scientific maturity and leadership in their work”.
- 2017 **Finalist (with PhD student Aobo Chen) of the Student Paper Competition** of the 2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting. San Diego, California, USA. July 9-14, 2017.

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- 2017 **Raj Mittra Travel Grant Award**
Awarded by the [IEEE Antennas and Propagation Society](#). The award committee “selects an awardee based primarily upon the candidate’s potential or demonstrated aptitude for research”.
- 2016 **WNCG Student Leadership Award**
“Each year, WNCG faculty nominate one outstanding student to receive the WNCG Student Leadership Award. The award is presented to a student based on their cumulative contributions to the center, including their representation of WNCG to the greater community, their mentorship of fellow students, their research visibility and recognition from external organizations”.
- 2015 **IEEE Photonics Society Graduate Student Fellowship**
“The IEEE Photonics Society established the Graduate Student Fellowship Program to provide Graduate Fellowships to outstanding Society student members pursuing graduate education within the Society field of interest (electro-optics, lasers, photonics, optics, or closely related fields)”. The Society awards up to ten Fellowships each year worldwide, based on research excellence and contributions to the Society’s publications and conferences.
- 2015 **FGSA Travel Award for Excellence in Graduate Research**
Awarded by the [American Physical Society](#), to support the participation to the [9th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2015](#), Oxford, UK, September 7-10, 2015. “The FGSA Travel Award recognizes graduate students who have made noteworthy progress in their academic careers. This includes both graduate students who demonstrate great potential as well as those with considerable accomplishments in their field”.
- 2015 **Honorable Mention**
Student Paper Competition of the [2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting](#), Vancouver, Canada, July 19-25, 2015, with the paper: F. Monticone, C. Valagiannopoulos, and A. Alù, “Aberration-Free Planar Focusing based on Parity-Time Symmetric Nonlocal Metamaterials”.
- 2015 **USNC-URSI Travel Fellowship Grant Award**
“For technical merit”, to support the participation to the [2015 North American Radio Science Meeting](#) in Vancouver, Canada, July 19-25, 2015.
- 2014 **H.L. Bruce Endowed Graduate Student Fellowship**
One of the most prestigious fellowships awarded by the Graduate School of The University of Texas at Austin.
- 2013 - Present **Physical Review Letters “Editors’ choice”**
For the papers: F. Monticone, and A. Alù, “[Embedded Photonic Eigenvalues in 3D Nanostructures](#)”; F. Monticone, N. Mohammadi Estakhri, and A. Alù, “[Full Control of Nanoscale Optical Transmission with a Composite Metascreen](#)”; F. Monticone, C. Argyropoulos, and A. Alù, “[Multi-Layered Plasmonic Covers for Comblike Scattering Response and Optical Tagging](#)”.
- 2014 **Honorable Mention**
Student Paper Competition of the [2014 IEEE AP-S International Symposium on Antennas and Propagation](#), Memphis, Tennessee, USA, July 6-11, 2014, with the paper: F. Monticone, V. Galdi, N. Engheta, and A. Alù, “ ‘[Computing Metasurfaces](#)’ to Perform Mathematical Operations”.

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- 2013 **IEEE Antennas and Propagation Society Doctoral Research Award**
Awarded by the IEEE Antennas and Propagation Society (AP-S) for my project proposal entitled “Molding the Scattering Response with Metamaterials and Plasmonics”.
- 2013 **Best Student Paper Award (1st prize)**
Metamaterials 2013 Student Paper Competition, with the paper: F. Monticone and A. Alù, “On the Physical Bounds of Cloaking and Invisibility”.
- 2013 **Incubic/Milton Chang Travel Award**
Awarded by the Optical Society of America (OSA).
- 2013 **Honorable Mention**
Student Paper Competition of the 2013 IEEE AP-S International Symposium on Antennas and Propagation, Orlando, Florida, USA, July 7-12, 2013, with the paper: F. Monticone, Xiaoqin Li, and A. Alù, “Strong Optical Magnetism and Fano Resonances in Asymmetric Plasmonic Metamolecules”.
- 2013 **USNC-URSI Travel Fellowship Grant Award**
“For technical merit”, to support the participation to the 2013 USNC-URSI National Radio Science Meeting in Boulder, CO, USA.

Contracts, Grants, and Sponsored Research

- 2018-2020 **AFOSR Young Investigator Program Award (YIP): Robust Topological Scattering and Radiating Structures: Bridging Free-Space Propagation and Surface Waves on Complex Objects**
Investigator(s): Francesco Monticone.
- 2017-2021 **EFRI NewLAW: Non-Reciprocal Wave Propagation Devices by Fermionic Emulation and Exceptional Point Physics**
Investigator(s): Debdeep Jena (Principal Investigator), Jacob Khurgin (Co-Principal Investigator), Huili (Grace) Xing (Co-Principal Investigator), Farhan Rana (Co-Principal Investigator), Francesco Monticone (Co-Principal Investigator).

Scientific Contributions

Summary

- **40+** papers, published or under review, in peer-reviewed international journals, including Science, Proceedings of the IEEE, Nature Nanotechnology, Nature Communications, Nature Photonics, Optica, Physical Review X, and Physical Review Letters.
- **60+** conference papers and abstracts.
- **20+** invited talks, lectures, and seminars.
- **2** book chapters.
- **Google Scholar Profile:**
<https://scholar.google.com/citations?user=IrARKxQAAAAJ&hl=en&oi=ao>

Peer-Reviewed Journal Papers

- [1] S. A. H. Gangaraj, C. Valagiannopoulos, and F. Monticone, “**Shape-independent ultra-subwavelength topological superscatterers,**” under review.
- [2] S. A. H. Gangaraj, G. W. Hanson, K. Shastri, M. G. Silveirinha, M. Antezza, and F. Monticone, “**Truly unidirectional excitation and propagation of diffractionless surface plasmons,**” under review.

- [3] C. Valagiannopoulos, S. A. H. Gangaraj, and F. Monticone, “**Zeeman gyrotropic scatterers: Resonance splitting, anomalous scattering, and embedded eigenstates,**” *Nanomaterials and Nanotechnology*, in press (*invited paper*).
- [4] S. A. H. Gangaraj, and F. Monticone, “**Coupled Topological Surface Modes in Gyrotropic Structures: Green’s Function Analysis,**” *IEEE Antennas and Wireless Propagation Letters*, in press (*invited paper*).
- [5] S. A. H. Gangaraj, M. G. Silveirinha, G. W. Hanson, M. Antezza, and F. Monticone, “**Optical torque on a two-level system near a strongly nonreciprocal medium,**” *Phys. Rev. B*, vol. 98, no. 12, p. 125146, Sep. 2018.
doi: [10.1103/PhysRevB.98.125146](https://doi.org/10.1103/PhysRevB.98.125146)
- [6] S. A. H. Gangaraj, and F. Monticone, “**Topological Waveguiding near an Exceptional Point: Defect-Immune, Slow-Light, and Loss-Immune Propagation,**” *Phys. Rev. Lett.*, vol. 121, no. 9, p. 093901, Aug. 2018.
doi: [10.1103/PhysRevLett.121.093901](https://doi.org/10.1103/PhysRevLett.121.093901)
- [7] H. Doleman, F. Monticone, W. den Hollander, A. Alù, and A. F. Koenderink, “**Experimental observation of a polarization vortex at an optical bound state in the continuum,**” *Nat. Photonics*, vol. 12, pp. 397-401, 2018.
doi: [10.1038/s41566-018-0177-5](https://doi.org/10.1038/s41566-018-0177-5)
- [8] F. Monticone, H. M. Doleman, W. Den Hollander, F. Koenderink, and A. Alù, “**Trapping Light in Plain Sight: Embedded Photonics Eigenstates in Zero-Index Metamaterials,**” *Laser Photon. Rev.*, vol. 12, no. 5, p. 1700220, Apr. 2018.
doi: [10.1002/lpor.201700220](https://doi.org/10.1002/lpor.201700220)
- [9] S. A. H. Gangaraj, and F. Monticone, “**Topologically-Protected One-Way Leaky Waves in Nonreciprocal Plasmonic Structures,**” *J. Phys. Condens. Matter*, vol. 30, no. 10, 2018 (*invited paper*).
doi: [10.1088/1361-648X/aaab24](https://doi.org/10.1088/1361-648X/aaab24)
- [10] S. A. H. Gangaraj, and F. Monticone, “**Molding light with metasurfaces: From far-field to near-field interactions,**” *Nanophotonics*, vol. 7, no. 6, pp. 1025-1040, 2018 (*invited review paper*).
doi: [10.1515/nanoph-2017-0126](https://doi.org/10.1515/nanoph-2017-0126)
- [11] F. Monticone, C. Argyropoulos, and A. Alù, “**Optical Antennas: Controlling Electromagnetic Scattering, Radiation, and Emission at the Nanoscale,**” *IEEE Antennas and Propagation Magazine, Special Issue on Optical Antennas*, Vol. 59, No. 6, pp. 43-61, October 18, 2017 (*invited review paper*).
doi: [10.1109/MAP.2017.2752721](https://doi.org/10.1109/MAP.2017.2752721)
- [12] F. Monticone, and A. Alù, “**Bound States within the Radiation Continuum in Diffraction Gratings and the Role of Leaky Modes,**” *New Journal of Physics*, Vol. 19, 093011 (8 pages), September 14, 2017.
doi: [10.1088/1367-2630/aa849f](https://doi.org/10.1088/1367-2630/aa849f)
- [13] S. Savoia, C. A. Valagiannopoulos, F. Monticone, G. Castaldi, V. Galdi, and A. Alù, “**Magnified Imaging Based on Non-Hermitian Nonlocal Cylindrical Metasurfaces,**” *Physical Review B*, Vol. 95, No. 11, 115114 (13 pages), March 8, 2017.
doi: [10.1103/PhysRevB.95.115114](https://doi.org/10.1103/PhysRevB.95.115114)
- [14] K. Chen, Y. Feng, F. Monticone, J. Zhao, B. Zhu, T. Jiang, L. Zhang, Y. Kim, X. Ding, S. Zhang, A. Alù, and C.-W. Qiu, “**A Reconfigurable Active Huygens’ Metaleins,**” *Advanced Materials*, Vol. 29, No. 17, 1606422 (7 pages), May 3, 2017.
doi: [10.1002/adma.201606422](https://doi.org/10.1002/adma.201606422)

- [15] F. Monticone, and A. Alù, “**Metamaterial, Plasmonic and Nanophotonic Devices,**” Reports on Progress in Physics, Vol. 80, No. 3, 036401 (37 pages), February 6, 2017 (*invited review paper*).
doi: [10.1088/1361-6633/aa518f](https://doi.org/10.1088/1361-6633/aa518f)
- [16] F. Monticone, D. Sounas, and A. Alù, “**Fundamental Limitations on Passive Cloaking, and Beyond,**” FERMAT, Vol. 19, No. 4 (2 pages), Jan.-Feb. 2017.
[available here](#)
- [17] F. Monticone, C. A. Valagiannopoulos, and A. Alù, “**Parity-Time Symmetric Nonlocal Metasurfaces: All-Angle Negative Refraction and Volumetric Imaging,**” Physical Review X, Vol. 6, 041018 (13 pages), October 25, 2016.
doi: [10.1103/PhysRevX.6.041018](https://doi.org/10.1103/PhysRevX.6.041018)
- [18] F. Monticone, and A. Alù, “**Invisibility Exposed: Physical Bounds on Passive Cloaking,**” Optica, Vol. 3, No. 7, pp. 718-724, July 5, 2016. [UT Austin press release. News highlights have appeared on [Huffington Post](#), [Optics and Photonics News](#), [VICE - Motherboard](#), [Science Alert](#), [Business Insider](#), [UT ECE News](#), [Physics.org](#), among others]
doi: [10.1364/OPTICA.3.000718](https://doi.org/10.1364/OPTICA.3.000718)
- [19] C. Valagiannopoulos,* F. Monticone,* and A. Alù, “**PT-Symmetric Planar Devices for Field Transformation and Imaging,**” Journal of Optics, Special Issue on Transformation Optics, Vol. 18, No. 4, 044028 (11pages), April 1, 2016, (*invited paper*). * Joint first authorship.
doi: [10.1088/2040-8978/18/4/044028](https://doi.org/10.1088/2040-8978/18/4/044028)
- [20] F. Qin*, L. Ding*, L. Zhang*, F. Monticone*, C. C. Chum, J. Deng, S. Mei, Y. Li, J. Teng, M. Hong, S. Zhang, A. Alù, and C. W. Qiu, “**Complementary Bilayer Metasurface to Efficiently Manipulate Light,**” Science Advances, Vol. 2, No. 1, e1501168 (8 pages), January 1, 2016. * Joint first authorship.
doi: [10.1126/sciadv.1501168](https://doi.org/10.1126/sciadv.1501168)
- [21] R. Fleury*, F. Monticone*, and A. Alù, “**Invisibility and Cloaking: Origins, Present, and Future Perspectives,,**” Physical Review Applied, Vol. 4, No. 3, 037001 (20 pages), September 1, 2015, (*invited review paper*). * Joint first authorship.
doi: [10.1103/PhysRevApplied.4.037001](https://doi.org/10.1103/PhysRevApplied.4.037001)
- [22] B. Hopkins, D. S. Filonov, A. E. Miroschnichenko, F. Monticone, A. Alù, and Y. S. Kivshar, “**Interplay of magnetic responses in all-dielectric oligomers and magnetic Fano resonances,**” ACS Photonics, Vol. 2, No. 6, pp. 724-729, June 1, 2015.
doi: [10.1021/acsphotonics.5b00082](https://doi.org/10.1021/acsphotonics.5b00082)
- [23] F. Monticone, and A. Alù, “**Leaky-Wave Theory, Techniques and Applications: From Microwaves to Visible Frequencies,**” Proceedings of the IEEE, Vol. 103, No. 5, pp. 793-821, May 26, 2015, (*invited paper*). [The paper has been featured on the cover. A prolog by J. Esch, introducing our paper, has also appeared on the same issue]
doi: [10.1109/JPROC.2015.2399419](https://doi.org/10.1109/JPROC.2015.2399419)
- [24] X. Ding*, F. Monticone*, K. Zhang, L. Zhang, D. Gao, S. N. Burokur, A. de Lustrac, Q. Wu, C. W. Qiu, and A. Alù, “**Ultrathin Pancharatnam-Berry Metasurface with Maximal Cross-Polarization Efficiency,**” Advanced Materials, Vol. 27, No. 7, pp. 1195-1200, February 18, 2015. * Joint first authorship.
doi: [10.1002/adma.201405047](https://doi.org/10.1002/adma.201405047)
- [25] A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Doing Math with Light,**” Optics and Photonics News, Year in Optics 2014, Vol. 25, No. 12, p. 52, December 1, 2014.
[available at: Optics and Photonics News](#)

- [26] F. Monticone, and A. Alù, “**Trapping Light in Plain Sight: Embedded Eigenstates in Open 3D Nanostructures,**” Forum for Electromagnetic Research Methods and Application Technologies (FERMAT), Vol. 6, No. 1, November 3, 2014.
available at: [FERMAT - News and Views](#)
- [27] F. Monticone, and A. Alù, “**The Quest for Optical Magnetism: From Split-Ring Resonators to Plasmonic Nanoparticles and Nanoclusters,**” Journal of Materials Chemistry C, Vol. 2, No. 43, pp. 9059-9072, October 16, 2014, (*invited feature article*).
doi: [10.1039/C4TC01406E](#)
- [28] F. Monticone, and A. Alù, “**Physical Bounds on Electromagnetic Invisibility and the Potential of Superconducting Cloaks,**” Photonics and Nanostructures - Fundamentals and Applications, Special Issue for Metamaterials 2013, Vol. 12, No. 4, 330-339, August 2014, (*invited paper*).
doi: [10.1016/j.photonics.2014.05.008](#)
- [29] F. Monticone, and A. Alù, “**Embedded Photonic Eigenvalues in 3D Nanostructures,**” Physical Review Letters, Vol. 112, No. 21, 213903 (5 pages), May 29, 2014.
[This paper has been selected as PRL Editor’s Suggestion]
doi: [10.1103/PhysRevLett.112.213903](#).
- [30] J. Shi*, F. Monticone*, S. Elias*, Y. Wu, D. Ratchford, X. Li, and A. Alù, “**Modular Assembly of Optical Nanocircuits,**” Nature Communications, Vol. 5, No. 3896, May 29, 2014. * Joint first authorship.
doi: [10.1038/ncomms4896](#).
- [31] C. Argyropoulos, F. Monticone, N. Mohammadi Estakhri, and A. Alù, “**Tunable Plasmonic and Hyperbolic Metamaterials,**” International Journal of Antennas and Propagation, Special Issue on ‘Reconfigurable Electromagnetics through Metamaterials’, Vol. 2014, 532634 (11 pages), April 6, 2014, (*invited paper*).
doi: [10.1155/2014/532634](#).
- [32] F. Monticone, and A. Alù, “**Metamaterials and Plasmonics: From Nanoparticles to Nanoantenna Arrays, Metasurfaces and Metamaterials,**” Chinese Physics B, Vol. 23, No. 4, 047809 (12 pages), March 20, 2014, (*invited review paper*). [This paper was the most downloaded Chinese Physics B paper in 2014]
doi: [10.1088/1674-1056/23/4/047809](#).
- [33] A. Silva*, F. Monticone*, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Performing Mathematical Operations with Metamaterials,**” Science, Vol. 343. No. 6167, pp. 160-163, January 10, 2014. [A [Perspective](#) from A. Sihvola has appeared on the same issue, pp. 144-145; News highlights have appeared on [Phys.org](#), [Nanowerk](#), [AzoNano](#), [Laser Focus World](#), [Tech Times](#), [The Alcalde](#), [La Repubblica](#), [New Scientist](#), [Live Science](#), [ANSA](#), [Penn Current](#), [UT News](#), among others] * Joint first authorship.
doi: [10.1126/science.1242818](#)
- [34] F. Monticone, and A. Alù, “**Metamaterial-Enhanced Nanophotonics,**” Optics and Photonics News, Year in Optics 2013, Vol. 24, No. 12, p. 35, November 26, 2013.
doi: [10.1364/OPN.24.12.000035](#).
- [35] F. Monticone, and A. Alù, “**Do Cloaked Objects Really Scatter Less?,**” Physical Review X, Special Issue on Metamaterials, Vol. 3, No. 4, 041005 (10 pages), October 21, 2013, (*invited paper*). [Press coverage by [BBC](#), [NBC News](#), [Physics World](#), [Live Science](#), [Gizmag](#), [Mashable](#), [The Horn](#), [The Alcalde](#), [Bio News Texas](#), [National Journal](#), [Time Magazine](#), among others]
doi: [10.1103/PhysRevX.3.041005](#)

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- [37] C. Argyropoulos, N. Mohammadi Estakhri, F. Monticone, and A. Alù, “**Negative Refraction, Gain and Nonlinear Effects in Hyperbolic Metamaterials,**” *Optics Express*, Focus Issue on Hyperbolic Metamaterials: Fundamentals and Applications, Vol. 21, No. 12, pp. 15037-15047, June 17, 2013, (*invited paper*). doi: [10.1364/OE.21.015037](https://doi.org/10.1364/OE.21.015037).
- [38] F. Monticone, N. Mohammadi Estakhri, and A. Alù, “**Full Control of Nanoscale Optical Transmission with a Composite Metascreen,**” *Physical Review Letters*, Vol. 110, No. 20, 203903 (5 pages), May 14, 2013. [This paper has been selected as PRL Editor’s suggestion; Press coverage by Phys.org]. doi: [10.1103/PhysRevLett.110.203903](https://doi.org/10.1103/PhysRevLett.110.203903).
- [39] F. Monticone, C. Argyropoulos, and A. Alù, “**Multi-Layered Plasmonic Covers for Comblike Scattering Response and Optical Tagging,**” *Physical Review Letters*, Vol. 110, No. 11, 113901 (5 pages), March 12, 2013. [This paper has been selected as PRL Editor’s suggestion]. doi: [10.1103/PhysRevLett.110.113901](https://doi.org/10.1103/PhysRevLett.110.113901).
- [40] F. Shafiei*, F. Monticone*, K. Q. Le, X. X. Liu, T. Hartsfield, A. Alù, and X. Li, “**A Subwavelength Plasmonic Metamolecule Exhibiting Magnetic-Based Optical Fano Resonance,**” *Nature Nanotechnology*, Vol. 8, pp. 95-99, January 27, 2013. [The paper has been featured on the [cover](#). A [News and Views](#) by P. Nordlander highlighting our findings has also appeared in the same issue]. * Joint first authorship. doi: [10.1038/nnano.2012.249](https://doi.org/10.1038/nnano.2012.249).
- [41] F. Monticone, C. Argyropoulos, and A. Alù, “**Layered Plasmonic Cloaks to Tailor the Optical Scattering at the Nanoscale,**” *Scientific Reports*, Special Issue for E-MRS 2012, Vol. 2, No. 912, December 3, 2012, (*invited paper*). doi: [10.1038/srep00912](https://doi.org/10.1038/srep00912).
- [42] C. Argyropoulos, P. Y. Chen, F. Monticone, G. D’Aguanno, and A. Alù, “**Nonlinear Plasmonic Cloaks to Realize Giant All-Optical Scattering Switching,**” *Physical Review Letters*, Vol. 108, No. 26, 263905 (5 pages), June 27, 2012. doi: [10.1103/PhysRevLett.108.263905](https://doi.org/10.1103/PhysRevLett.108.263905).
- [43] P. Y. Chen, F. Monticone, and A. Alù, “**Suppressing the Electromagnetic Scattering with an Helical Mantle Cloak,**” *IEEE Antennas and Wireless Propagation Letters*, Special Cluster on Metamaterials, Vol. 10, pp. 1598-1601, December 9, 2011, (*invited paper*). doi: [10.1109/LAWP.2011.2179001](https://doi.org/10.1109/LAWP.2011.2179001).

Book Chapters

- [1] F. Monticone, and A. Alù, “**Scattering at the Extreme with Metamaterials and Plasmonics,**” in *World Scientific Handbook of Metamaterials and Plasmonics*, S. Maier, ed., Vol. 1, Ch. 7, pp. 295-335, Dec. 2017. doi: [10.1142/9789813228696_0007](https://doi.org/10.1142/9789813228696_0007)
- [2] P. Y. Chen, F. Monticone, C. Argyropoulos, and A. Alù, “**Plasmonic Optical Nanoantennas,**” in *Modern Plasmonics*, A. Maradudin, J. R. Sambles, W. L. Barnes, eds., Elsevier, Ch. 4, pp. 109-136, 2014.

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Invited Talks, Lectures, and Seminars (presented by Dr. Monticone)

- [1] **“Fascinating Wave Phenomena in Topological Matter: Topologically-Protected Embedded Eigenstates, Leaky Modes, and Exceptional Points,”** 2018 MRS Fall Meeting, Boston, Massachusetts, USA, November 25-30, 2018.
- [2] **“Advanced Material Platforms for Electromagnetic Wave Manipulation,”** NCMN Seminar, Nebraska Center for Materials and Nanoscience (NCMN), University of Nebraska-Lincoln, Lincoln, NE, USA, November 14, 2018.
- [3] **“Non-Reciprocal Wave Propagation Devices by Fermionic Emulation and Exceptional Point Physics,”** NSF EFRI-2DARE & NewLAW Grantees Meeting 2018, San Diego, CA, USA, October 17-19, 2018.
- [4] **“New Frontiers for Electromagnetic Wave Manipulation,”** Cornell ECE/EDS Seminar, September 7, 2018.
- [5] **“Topologically-Protected Embedded Eigenstates, Leaky Modes, and Jordan Modes,”** Metamaterials, Metadevices, and Metasystems 2018, SPIE Nanoscience + Engineering, San Diego, CA, USA, August 19-23, 2018.
- [6] **“Physical Bounds on Metamaterial Structures and Extreme Electromagnetic Effects,”** 2018 SIAM Conference on Mathematical Aspects of Materials Science (MS18), Portland, Oregon, USA, July 9-13, 2018.
- [7] **“New Frontiers for Topologically-Protected and Nonreciprocal Wave Manipulation,”** IEEE EDS/SSCS New York Chapter Mini-Colloquium on New Modes of Light and Acoustic Wave Propagation (NewLAW), Columbia University, New York, USA, June 14, 2018.
- [8] **“New Frontiers in Plasmonics: Embedded Eigenstates and Topological Effects,”** 2nd URSI Atlantic Radio Science Conference (URSI AT-RASC), Gran Canaria, Spain, May 28 - June 1, 2018.
- [9] **“Scattering engineering at the extreme: Anomalies, singularities, and physical bounds in passive and active meta-structures,”** EUPROMETA - 35th Doctoral School on Metamaterials, Roma Tre University, Rome, Italy, December 19, 2017 (invited lecture).
- [10] **“Molding light with metamaterials, metasurfaces, and nanostructures,”** Cornell OSA Chapter Seminar, September 22, 2017.
- [11] **“Scattering Engineering at the Extreme: Physical Bounds, Anomalies and Singularities in Passive and Active Metamaterial Structures,”** International Conference on Electromagnetics in Advanced Applications (ICEAA'17), Verona, Italy, September 11-15, 2017.
- [12] **“Engineering the interaction of light, structure and matter: Metamaterials, Plasmonics and Nanophotonics,”** Cornell ECE, Advisory Council Meeting, March 23, 2017.
- [13] **“Parity-time symmetric nonlocal metasurfaces: Focusing and imaging through balanced loss and gain,”** The 47th Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird, Utah, USA, January 8-13, 2017.
- [14] **“Exotic Wave Interactions with Metamaterials, Metasurfaces and Nanostructures,”** Cornell University, Department of Electrical and Computer Engineering, April 2016.

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- [15] “**Exotic Wave Interactions with Metamaterials, Metasurfaces and Nanostructures,**” University of North Carolina at Charlotte, Department of Electrical and Computer Engineering, March 2016.
- [16] “**Scattering Engineering at the Extreme and Exotic Wave Interactions with Metamaterials and Metasurfaces,**” University of Washington at Seattle, Department of Electrical and Computer Engineering, March 2016.
- [17] “**Scattering Engineering at the Extreme and Exotic Wave Interactions with Metamaterials and Metasurfaces,**” University of Rochester, Institute of Optics, March 2016.
- [18] “**Extraordinary Light Trapping in Plasmonic and Metamaterial Structures,**” SPIE Photonics Europe, Brussels, Belgium, April 4, 2016.
- [19] “**Scattering Engineering at the Extreme with Metamaterials and Plasmonics,**” Nanophotonics Colloquium, FOM Institute AMOLF, Amsterdam, The Netherlands, December 9, 2015.
- [20] “**Realization and Operation of Modular 3-D Optical Nanocircuits,**” 2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Vancouver, Canada, July 19-25, 2015.
- [21] “**Cloaking devices,**” Faculty of Science, Macquarie University, Sydney, Australia, October 8, 2010.

Conference Papers and Abstracts

- [1] F. Monticone, “**Fascinating Wave Phenomena in Topological Matter: Topologically-Protected Embedded Eigenstates, Leaky Modes, and Exceptional Points,**” 2018 MRS Fall Meeting, Boston, Massachusetts, USA, November 25-30, 2018, (invited).
- [2] F. Monticone, “**Topologically-Protected Embedded Eigenstates, Leaky Modes, and Jordan Modes,**” Metamaterials, Metadevices, and Metasystems 2018, SPIE Nanoscience + Engineering, San Diego, CA, USA, August 19-23, 2018, (invited).
- [3] H. Doleman, F. Monticone, W. den Hollander, A. Alù, and A. F. Koenderink, “**Experimental observation of a polarization vortex at a bound state in the continuum,**” Active Photonic Platforms X, SPIE Nanoscience + Engineering, San Diego, CA, USA, August 19-23, 2018.
- [4] S. A. H. Gangaraj, and F. Monticone, “**Topologically-protected leaky-wave structures,**” 2018 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Boston, Massachusetts, USA, July 8-13, 2018.
- [5] S. A. H. Gangaraj, and F. Monticone, “**Modal interactions and degeneracies in coupled photonic topological insulators with loss and gain,**” 2018 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Boston, Massachusetts, USA, July 8-13, 2018.
- [6] S. A. H. Gangaraj, F. Monticone, M. G. Silveirinha, G. W. Hanson, and M. Antezza “**Spontaneous lateral atomic recoil force and torque close to a photonic topological material,**” 2018 Progress In Electromagnetics Research Symposium, Toyama, Japan, August 1-4, 2018.
- [7] F. Monticone, “**Physical Bounds on Metamaterial Structures and Extreme Electromagnetic Effects,**” 2018 SIAM Conference on Mathematical Aspects of Materials Science (MS18), Portland, Oregon, USA, July 9-13, 2018 (invited).

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- [8] F. Monticone, “**New Frontiers in Plasmonics: Embedded Eigenstates and Topological Effects,**” 2nd URSI Atlantic Radio Science Conference (URSI AT-RASC), Gran Canaria, Spain, May 28 - June 1, 2018 (invited).
- [9] S. A. H. Gangaraj, and F. Monticone, “**Topologically-protected leaky-wave structures,**” National Radio Science Meeting, Boulder, CO, January 4-7, 2018 (invited).
- [10] M. G. Silveirinha, A. Hassani, G. W. Hanson, M. Antezza, and F. Monticone, “**Photonic topological insulator - Creation of a spontaneous lateral atomic recoil force,**” National Radio Science Meeting, Boulder, CO, January 4-7, 2018.
- [11] F. Monticone, “**Scattering Engineering at the Extreme: Physical Bounds, Anomalies and Singularities in Passive and Active Metamaterial Structures,**” International Conference on Electromagnetics in Advanced Applications (ICEAA’17), Verona, Italy, September 11-15, 2017 (invited talk).
- [12] A. Alù, D. L. Sounas, A. Krasnok, and F. Monticone, “**Embedded Eigenstates and Coherent Virtual Absorption in Metamaterial Structures,**” 32nd International Union of Radio Science General Assembly and Scientific Symposium, Montreal, Canada, August 19-26, 2017.
- [13] A. Krasnok, F. Monticone, and A. Alù, “**Embedded Eigenstates and Virtual Absorption Using Metamaterials,**” SPIE Optics and Photonics, San Diego, CA, August 6-10, 2017.
- [14] A. Chen, A. Alù, and F. Monticone, “**Invisible Near-Field Probes at Infrared Frequencies based on Impedance Engineering at the Nanoscale,**” IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, San Diego, CA, July 9-14, 2017.
- [15] F. Monticone, and A. Alù, “**On Invisible Bodies, Nonradiating Sources, and Embedded Eigenstates,**” IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, San Diego, CA, July 9-14, 2017.
- [16] A. Alù, F. Monticone, and A. Krasnok, “**Embedded Eigenstates and Virtual Absorption Using Metamaterials,**” 9th International Conference on Materials for Advanced Technologies (ICMAT 2017), Singapore, June 18-23, 2017.
- [17] F. Monticone, and A. Alù, “**Trapping Light in Plain Sight: Embedded Photonic Eigenstates Using Metamaterials,**” 6th International Topical Meeting on Nanophotonics and Metamaterials (NanoMeta), Seefeld, Austria, January 4-9, 2017.
- [18] F. Monticone, and A. Alù, “**Parity-Time Symmetric Nonlocal Metasurfaces: Focusing and Imaging Through Balanced Loss and Gain,**” 47th Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird, UT, January 8-13, 2017, (invited paper).
- [19] F. Monticone, and A. Alù, “**Foster’s Reactance Theorem Implications for Scattering and Cloaking,**” in Proceedings of the 2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Fajardo, Puerto Rico, June 26-July 1, 2016.
- [20] F. Monticone, and A. Alù, “**Boosting the Directivity of Optical Nanoantennas,**” in Proceedings of the 2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Fajardo, Puerto Rico, June 26-July 1, 2016, (invited talk).

- [21] F. Monticone, and A. Alù, “**Scattering and Radiation Singularities in Epsilon-Near-Zero Structures**,” in Proceedings of the 2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Fajardo, Puerto Rico, June 26-July 1, 2016.
- [22] F. Monticone, and A. Alù, “**Trapping Light in Plain Sight**,” Nanoscale Quantum Optics 2015, Amsterdam, The Netherlands, October 23, 2015.
- [23] F. Monticone, and A. Alù, “**Leaky Waves, Wood’s Anomalies and Extraordinary Optical Trapping**,” 9th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2015, Oxford, UK, September 7-10, 2015.
- [24] F. Monticone, C. Valagiannopoulos, S. Savoia, R. Fleury and A. Alù, “**PT-Symmetric Metamaterial Systems for Aberration-Free Imaging and Wave Manipulation**,” 9th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2015, Oxford, UK, September 7-10, 2015.
- [25] F. Monticone, and A. Alù, “**Embedded Photonic Eigenstates: Towards Ideal Light Localization and Confinement in Open Nanostructures**,” OSI 2015 - The International Conference on Optics of Surfaces and Interfaces, Austin, Texas, USA, June 28 - July 3, 2015.
- [26] F. Monticone, N. Mohammadi Estakhri, and A. Alù, “**Linear and Nonlinear Optical Nano-Antennas**,” 2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Vancouver, Canada, July 19-25, 2015, (*invited talk*).
- [27] F. Monticone, C. Argyropoulos, and A. Alù, “**MIMO Optical Wireless at the Nanoscale**,” 2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Vancouver, Canada, July 19-25, 2015.
- [28] F. Monticone, and A. Alù, “**Embedded Scattering Eigenstates: Light Trapping in 2D and 3D Systems**,” 2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Vancouver, Canada, July 19-25, 2015.
- [29] F. Monticone, C. Valagiannopoulos, and A. Alù, “**Aberration-Free Planar Focusing based on Parity-Time Symmetric Nonlocal Metamaterials**,” 2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Vancouver, Canada, July 19-25, 2015.
- [30] F. Monticone, C. Valagiannopoulos, S. Savoia, R. Fleury and A. Alù, “**Parity-Time Symmetric Nonlocal Metamaterials for Focusing and Image Processing**,” 2015 APS March Meeting, San Antonio, Texas, USA, March 2-6, 2015.
- [31] F. Monticone, and A. Alù, “**Scattering Engineering: From Broadband Cloaking and Resonance Effects, to Embedded Scattering Eigenvalues in 3D Nanostructures**,” 8th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2014, Copenhagen, Denmark, August 25-30, 2014.
- [32] C. Della Giovampaola, B. Edwards, A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, N. Engheta “**Recent Progress in Metamaterials That Perform Mathematical Operations**,” 8th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2014, Copenhagen, Denmark, August 25-30, 2014.

- [33] F. Monticone, V. Galdi, N. Engheta, and A. Alù, “**‘Computing Metasurfaces’ to Perform Mathematical Operations,**” 2014 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Memphis, Tennessee, USA, July 6-12, 2014.
- [34] C. Della Giovampaola, B. Edwards, A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Waveguide-based Metamaterials as a Platform for Mathematical Operations,**” 2014 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Memphis, Tennessee, USA, July 6-12, 2014.
- [35] A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Meta-material-Based Analog Computing,**” Third Mediterranean Photonics Conference, Trani, Italy, May 7-9, 2014.
- [36] F. Shafiei, F. Monticone, K. Le, X. Liu, T. Hartsfield, A. Alù, X. Li, “**Plasmonic Magnetic Nanostructure,**” 2014 APS March Meeting, Denver, CO, March 3-7, 2014.
- [37] J. Shi, S. Elias, F. Monticone, Y. Wu, D. Ratchford, X. Li, and A. Alù, “**Assembling Three-Dimensional Optical Stereo-Nanocircuits,**” 2014 APS March Meeting, Denver, CO, March 3-7, 2014.
- [38] F. Monticone, X. Li, and A. Alù, “**Boosting Optical Magnetism with Symmetry Breaking in a Subwavelength Plasmonic Metamolecule,**” Frontiers in Optics 2013, Orlando, FL, USA, October 6-10, 2013.
- [39] F. Monticone, and A. Alù, “**Controlling the Nanoscale Optical Transmission with Single and Stacked Metasurfaces,**” Frontiers in Optics 2013, Orlando, FL, USA, October 6-10, 2013.
- [40] F. Monticone, and A. Alù, “**On the Physical Bounds of Cloaking and Invisibility,**” 7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2013, Bordeaux, France, September 16-21, 2013. [best student paper award].
- [41] A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Mathematical Manipulation with Metamaterials,**” 7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics - Metamaterials 2013, Bordeaux, France, September 16-21, 2013.
- [42] F. Monticone, X. Li, and A. Alù, “**Strong Optical Magnetism and Fano Resonances in Asymmetric Plasmonic Metamolecules,**” 2013 IEEE International Symposium on Antennas and Propagation, Lake Buena Vista, FL, July 7-12, 2013.
- [43] F. Monticone, R. Fleury, and A. Alù, “**Physical Bounds and Limitations of Cloaking and Invisibility Using Passive Metamaterials,**” USNC-URSI National Radio Science Meeting, Lake Buena Vista, FL, July 7-12, 2013.
- [44] A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Metastructures for Signal Manipulation,**” USNC-URSI National Radio Science Meeting, Lake Buena Vista, FL, July 7-12, 2013.
- [45] F. Monticone, and A. Alù, “**Molding the Optical Transmission with a Meta-Transmitarray,**” USNC-URSI National Radio Science Meeting, Lake Buena Vista, FL, July 7-12, 2013.
- [46] F. Shafiei, F. Monticone, K. Le, X. Liu, T. Hartsfield, A. Alù, and X. Li, “**Subwavelength Plasmonic Metamolecule Exhibiting Magnetic-Based Optical Fano Resonance,**” CLEO 2013, San Jose, CA, USA, June 9-14, 2013.

- [47] A. Alù, and F. Monticone, “**Physical Bounds, Potential and Limitations of Metamaterial Cloaks,**” 2013 SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, June 8-12, 2013, (*invited talk*).
- [48] A. Silva, F. Monticone, G. Castaldi, V. Galdi, A. Alù, and N. Engheta, “**Metamaterial Analog Computing,**” 2013 SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, June 8-12, 2013, (*invited talk*).
- [49] F. Shafiei, F. Monticone, K. Q. Le, X. X. Liu, T. Hartsfield, A. Alù, and X. Li, “**A Subwavelength Magnetic Metamolecule,**” 2013 American Physical Society March Meeting, Baltimore, MA, March 18-22, 2013
- [50] F. Monticone, and A. Alù, “**Fundamental Passivity and Causality Bounds on Metamaterial Cloaking,**” URSI-USNC National Radio Science Meeting, Boulder, CO, January 9-12, 2013.
- [51] F. Monticone, and A. Alù, “**Manipulating the Nanoscale Optical Transmission with a Meta-Transmitarray,**” NanoMeta 2013, Seefeld, Tirol, Austria, January 3-6, 2013.
- [52] A. Alù, F. Monticone, and Romain Fleury, “**Fundamental Physical Bounds on Metamaterial Cloaking,**” NanoMeta 2013, Seefeld, Tirol, Austria, January 3-6, 2013, (*invited talk*).
- [53] A. Alù, C. Argyropoulos, P. Y. Chen, F. Monticone, N. Mohammadi, Y. Zhao, “**Nano-antenna Arrays to Tailor Absorption, Polarization and Nonlinear Effects,**” NanoMeta 2013, Seefeld, Tirol, Austria, January 3-6, 2013.
- [54] F. Monticone, and A. Alù, “**Multi-Layered Plasmonic Cloaks to Engineer the Scattering Signature of Resonant Nanoparticles,**” in Proceedings of the 2012 IEEE International Symposium on Antennas and Propagation, Chicago, IL, USA, July 8-14, 2012.
- [55] A. Alves, G. Castaldi, V. Galdi, F. Monticone, A. Alù, and N. Engheta, “**Signal-Processing Metamaterials and Non-Local Transformation Optics,**” Gordon Research Conference on Plasmonics: Light Matter Interaction at the Nanoscale, Colby College, ME, USA, June 10-15, 2012.
- [56] F. Monticone, and A. Alù, “**Multi-Layered Plasmonic Cloaks to Engineer the Scattering Signature of Resonant Nanoparticles,**” Gordon Research Conference on Plasmonics: Light Matter Interaction at the Nanoscale, Colby College, ME, USA, June 10-15, 2012.
- [57] A. Alù, F. Monticone, and C. Argyropoulos, “**Multilayered Plasmonic Cloaks to Engineer Scattering, Absorption and Emission Spectra of Nanoparticles for Sensing and Energy Applications,**” in Proceedings of the European Materials Research Society Spring Meeting 2012, Strasbourg, France, May 14-18, 2012, (*invited talk*).
- [58] C. Argyropoulos, F. Monticone, and A. Alù, “**Plasmonic Composite Nanoparticles to Engineer the Optical Scattering Spectra,**” in Proceeding of CLEO 2012, San Jose, CA, USA, May 6-11, 2012.
- [59] L. Matekovits, F. Monticone, M. Orefice, K.P. Esselle, and G. Vecchi, “**Avoiding conductor width discontinuities at the cell borders in width-modulated microstrip line periodic structures,**” in Proceedings of the International Conference on Electromagnetics in Advanced Applications, ICEAA’2010, Sydney, Australia, September 20-24, 2010.
- [60] F. Monticone, L. Matekovits, and M. Orefice, “**Design parameter space for width-modulated microstrip line based periodic unit cell,**” in Proceedings of the 39th European Microwave Conference, Rome, Italy, September 28 - October 3, 2009.

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Thesis and Dissertations

- [1] F. Monticone, “**Scattering Engineering at the Extreme with Metamaterials, Metasurfaces and Nanostructures,**” PhD Dissertation, The University of Texas at Austin, Oct. 2016.
- [2] F. Monticone, “**Theoretical analysis and design of a conformal electromagnetic cloak based on periodically-modulated microstrip lines on a flexible polymeric shell,**” Master’s Thesis, Politecnico di Torino, Torino, Italy, 2011.
- [3] F. Monticone, “**Design and analysis of width-modulated microstrip-line based high impedance surfaces,**” Bachelor’s Thesis, Politecnico di Torino, Torino, Italy, 2009.

Media and Press Interest

- [1] “**Francesco Monticone receives Air Force’s Young Investigator Research Program (YIP) Award,**” [Cornell ECE News](#), October 10, 2018.
- [2] “**AFOSR Awards Grants to 31 Scientists and Engineers through its Young Investigator Research Program,**” [AFOSR News](#), September 26, 2018.
- [3] Nicholas H. L. Wong “**Graduate Student Fellows—A Catch-Up,**” [IEEE Photonics Society News](#), October, 2018.
- [4] “**One-Way Light for Energy-Efficient Information Systems,**” [Cornell Research](#), September, 2018.
- [5] “**Physicists catch light in the eye of the storm,**” [AMOLF Institute News](#), June 4, 2018.
- [6] “**Physicists catch light in the eye of the storm,**” [Phys.org](#), June 4, 2018.
- [7] “**Amsterdam physicists capture light in the eye of the storm,**” [University of Amsterdam News](#), June 4, 2018.
- [8] “**ECE researchers win \$1.7 million award to bend the rules of wave physics,**” [Cornell ECE](#), May 25, 2017.
- [9] “**Dr. Francesco Monticone Awarded the Inaugural Margarida Jacome Dissertation Prize,**” [UT ECE News](#), June 22, 2017.
- [10] “**ECE Assistant Professor Francesco Monticone receives inaugural dissertation prize from alma mater,**” [Cornell ECE](#), May 25, 2017.
- [11] “**Monticone wins 2017 Raj Mittra Travel Grant Award**”, [Cornell ECE](#), April 19, 2017.
- [12] C. Dawson, “**Cornell ECE Spotlight: Welcome Francesco Monticone**”, [Cornell ECE](#), January 25, 2017.
- [13] A. Dela Cruz, “**EEWeb Featured Engineer: Francesco Monticone**”, [EE Web - Electrical Engineering Community](#), January 8, 2017.
- [14] L. Bringle, “**Student Francesco Monticone Accepts Cornell Faculty Position**”, [WNCG News](#), August 1, 2016.
- [15] A. Khwaja, “**UT researchers study the possibilities of invisibility**”, [The Daily Texan](#), September 7, 2016.

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- [16] H. M. Lawrenz, “**Invisibility Cloaks: Fact or Fiction?**”, [BioTechniques](#), August 16, 2016.
- [17] A. Nowogrodzki, “**Now You See Me: True Invisibility Cloak Impossible to Build**”, [New Scientist](#), July 29, 2016.
- [18] S. Wills, “**Probing the Limits of Broadband Cloaking**”, [Optics and Photonics News](#), July 6, 2016.
- [19] J. Amatulli, “**We Probably Won’t Have Human Invisibility Cloaks, Because Physics**”, [Huffington Post](#), July 6, 2016.
- [20] M. Byrne, “**You Will Never Be Invisible**”, [VICE - Motherboard](#), July 6, 2016.
- [21] F. MacDonald, “**The Laws of Physics Make a Human Invisibility Cloak Pretty Much Impossible**”, [Science Alert](#), [Business Insider](#), July 6, 2016.
- [22] “**Researchers determine fundamental limits of invisibility cloaks**”, [Nanowerk](#), July 6, 2016.
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