

- **Microwave Heating, Current Drive and Diagnostics of Plasmas**
 - First diagnostic (spinning mirror) for rapid angular scans of Electron Bernstein Wave (EBW) emission [Rev. Sci. Instrum. 2010]
 - First EBW current drive by Ordinary-eXtraordinary-Bernstein mode conversion (with H.P. Laqua) [Phys. Rev. Lett. 2003]
 - First heat waves generated by EBW heating and measured by EBW emission [Rev. Sci. Instrum. 2003]
 - First EBW emission diagnostic of electron temperature profiles, i.e. first extension of ECE to overdense plasmas [Rev. Sci. Instrum. 2003]
 - First ray tracing code including mode conversions and 3D stellarator geometry [Rev. Sci. Instrum. 2003]
- **Stellarators (Simplification, High β)**
 - First generation of rotational transform by tilted toroidal field planar coils
- **Electromagnetic Metamaterials**
 - First metamaterial lens of reverse chromatic aberration by design [Optics Express 2012]

Academic Appointments

2015 -date **Associate Professor**
 2012 -15 **Assistant Professor** Dept Appl. Physics & Appl. Math., **Columbia Univ.**, NY, U.S.A.

- Stellarators
 - Generated rotational transform in torsatron of 6 tilted planar coils.
 - Converted CNT in neutral electron-cyclotron-heated stellarator for fusion-relevant research. Some results: (a) inferred coil-misalignments from comparison of experimental and numerical flux-surfaces, (b) inverted stellarator images by “onion-peeling”, (c) overdense heating, $4\times$ above cutoff density, (d) numerically predicted β stability limit to ballooning and corresponding heating power, (e) observed synergy between microwave and electron gun start-up.
 - Conceived and modeled first Toroidal Electron Cyclotron Resonant Ion Source for accelerators.
- Locked Modes (collab. with GA San Diego)
 - Recovered high confinement H-mode after locked mode stabilization at DIII-D
 - Magnetic control in 5 tokamaks, 2 spherical tokamaks, 2 reversed field pinch and 1 helical device. Applicability to ITER (with colleagues worldwide).
 - Locked Mode and disruption database
 - Phase controller
 - Prevented locking and disruption by “pre-emptive entrainment”
 - eigspec: stochastic subspace identification of rotating precursors
- Error Field detection from interaction with:
 - Locked Modes and Quasi-stationary Modes at DIII-D tokamak.
 - Resistive Wall Modes and Tearing Modes at EXTRAP-T2R reversed field pinch (collab. with KTH Stockholm).
- Waves in plasmas
 - New numerical method based on Huygens’ principle.
 - Demonstrated, by full-wave modeling, feasibility of magnetic diagnostic based on oblique reflectometry imaging and mode conversions.
- Metamaterials - Designed, ink-jet printed lens of reverse chromatic aberration.
- Liquid Metal Walls -
 - Demonstrated sensors and actuators for feedback stabilization.
 - Demonstrated gravity-defying ceiling-adhesion of free-surface flow.

- 2012, summer** **Visiting Assistant Professor, Kyoto University, Japan**
- Built radiometer for EBW emission at Heliotron J.
- 2009 -11** **Assistant Professor Engineering Physics Dept, Univ. Wisconsin, Madison, U.S.A.**
- Locked modes and NTMs at the DIII-D tokamak (collab. GA San Diego).
 - Entrainment and ECCD stabilization
 - First complete stabilization of locked mode by ECCD and magnetic perturbations.
 - Started Locked Mode database
 - Error Field detection from interaction with stable RWMs (collab. KTH Stockholm).
 - Magnetic barriers in plasma edge stochasticized by Resonant Magnetic Perturbations for Edge Localized Mode (ELM) in DIII-D (collab. GA San Diego).
 - NTM dependence on impurities and Lithium wall (collab. PPPL Princeton).
 - Full-wave modeling mode-conversions in Pegasus sph. tok. (collab. IPF Stuttgart).
 - Metamaterials - Numerical feasibility of metamaterial lens of reverse chromatic aberration, i.e. of focal length increasing with frequency.

Research Appointments

- 2008** **Staff Physicist, Max-Planck-Inst. für Plasmaphysik (IPP), Garching, Germany**
- Electron Cyclotron Reson. Heating (ECRH) operator, ASDEX Upgrade Tokamak.
 - Fast version of TORBEAM beam/ray tracing code, for real-time use.
 - Feasibility of EBW Current Drive in RFX-mod reversed field pinch (with R. Bilato and IPF Stuttgart).
- 2007 -08** **Oak Ridge Associated Univ. (ORAU) Post-doctoral Fellow**
2006 -07 **Otto-Hahn Medal Post-doctoral Fellow, General Atomics, San Diego, U.S.A.**
- Physics and control of locked modes and NTMs
 - Oblique and horizontal Electron Cyclotron Emission (ECE)
 - Spinning mirror Electron Bernstein Wave (EBW) emission (collab. UKAEA).
- 2006** **Adv. Training Sch., Max-Planck-Inst. Plasmaphys. (IPP), Greifswald, Germany**
- Weakly relativistic dielectric tensor valid for arbitrary wavenumbers.
 - Incorporated EBWs and mode conversions in TRAVIS ray tracing (with N.Marushchenko). Interfaced code to EFIT tokamak equilibria (with Yu.Turkin).
- 2004 -05** **Physicist, Fircroft, UKAEA Fusion, Culham, U.K.**
2002 -04 **Post-doc, UKAEA Fusion, Culham, U.K.**
- Ray tracing, Fokker-Planck optimization of ITER ECRH Upper Launcher for NTM stabilization (with several groups worldwide).
 - EBW emission, heating (exp.) and current drive (num.) at MAST sph.tokamak. Spinning mirror for ang. scan of emission, for q -profile meas. and heating optimiz.
 - MAST Session Leader¹
 - Internal collaborations: 1) double-null-merging non-solenoid startup, 2) optics for MAST Interferom., 3) interpretation JET Interferometer signals during ELMs.
 - Collective Thomson Scattering (CTS) at FTU (collab. ENEA Frascati)
 - Installed ray tracing code for mode-converted EBWs, for interpretation of heating experiments at TCV tokamak (collab.CRPP-EPFL Lausanne).

¹A.k.a. physics operator, leads an experimental session, programs the coil-currents, gas injection, density and position

- 1998-2002** **PhD student IPP**, Garching bei München, Germany
- EBW emission measurements at Wendelstein 7-AS (W7-AS) stellarator
 - Analytical solution of OX conversion
 - Ray tracing of mode-converted EBWs, applied to emission and current drive
- 1998**, summer **Fellow, Consorzio di Magnetofluidodinamica, Univ. of Trieste**, Italy
- 2D finite difference code for liquid metal flows of industrial interest
- 1997 -98** **Undergraduate student, ENEA**, Frascati (Rome), Italy
- Collective Thomson Scattering (CTS) at FTU tokamak.

Research Grants

Total: > \$1,350,000

- 08/2017 - 07/2018** Department of Energy (DOE), Renewal of DE-SC0016372
 “Island Rotation and Locking at DIII-D”
 PI: Francesco Volpe. Co-PI: Andrew Cole. \$155,000
- 08/2016 - 07/2018** National Science Foundation (NSF), PHY-1632802
 “Modeling Ion Extraction from First Toroidal Electron-Cyclotron-Resonance Ion Source”
 PI: Francesco Volpe. \$194,000
- 08/2016 - 07/2017** Department of Energy (DOE), DE-SC0016372
 “Physics and Control of Disruptive Locked Modes at DIII-D”
 PI: Francesco Volpe. \$175,000
- 07/2012 - 07/2016** Department of Energy (DOE), DE-SC008520
 “Physics and Control of Locked Modes in the DIII-D Tokamak” (Early Career Award)
 PI: Francesco Volpe. \$600,000
- 07/2011 - 07/2012** Department of Energy (DOE), DE-SC0006415
 “Physics and Control of Locked Modes in the DIII-D Tokamak” (Early Career Award)
 PI: Francesco Volpe. \$150,000
- 05/2011 - 05/2012** Graduate School, Univ. of Wisconsin, Madison
 “Electron Bernstein Wave Studies in the MST Plasma Experiment”
 PI: Francesco Volpe. \$57,126
- 08/2010 - 09/2010** General Atomics
 “Analysis of Locked Mode Control”
 PI: Francesco Volpe. \$26,437

Honors, fellowships and awards

- 2015** Excellence in Fusion Engineering Award, Fusion Power Associates, USA
- 2012** Visiting Professorship in Kyoto University, Japan
- 2012** Finalist at ISSNAF Award for Young Investigators
- 2012** Torkil Jensen Award, General Atomics
- 2011** DOE Early Career Award

feedbacks and gives directives to the pellet, heating and data acquisition operators. His/her aim is to create a plasma with certain characteristics of density, temperature, shape etc., agreed with the physicists in charge of the experiment.

- 2007 Oak Ridge Associated Universities (ORAU) Fellowship
2003 Otto-Hahn Medal - thesis prize of the Max-Planck Gesellschaft (Germany)
2002 Marie Curie Individual Fellowship, European Commission Research Directorate

Publications and other “Products”

Publication summary

(for the full list of publications, please refer to <http://www.columbia.edu/~fv2168/ Publ/1Pub.pdf>)

5 journal articles under review

65 journal articles published

20 IAEA conference papers

113 conference papers, reports and other publications

h-index = 14 and >600 citations according to ISI Web of Knowledge
(<http://www.researcherid.com/rid/D-2994-2009>).

h-index = 19 and >900 citations according to Google Scholar.

Selected publications

Criteria for selection: Phys. Rev. Lett. and/or highly cited (>20 citations) and/or recent journal publications (last 12 months).

65. S.M.H. Mirhoseini, R.R. Diaz-Pacheco, F.A. Volpe
Passive and active electromagnetic stabilization of free-surface liquid metal flows
Magnetohydrodyn. **53**, 45 (2017)
Preprint: arXiv:1702.01040
64. K.J. Hammond, S.A. Lazerson, F.A. Volpe
High β equilibrium and ballooning stability of low aspect ratio CNT stellarator
Phys. Plasmas **24**, 042510 (2017)
Preprint: arXiv:1612.09350
63. F.A. Volpe
Prospects for a dominantly microwave-diagnosed magnetically confined fusion reactor
J. Instrum. **12**, C01094 (2017)
Preprint: arXiv:1701.03132
62. F.A. Volpe, P.-D. Létourneau, A. Zhao
Huygens-Fresnel wavefront tracing
Comput. Phys. Commun. **212**, 123 (2017)
Preprint: arXiv:1509.02966
61. M. Okabayashi, P. Zanca, E.J. Strait, D. Shiraki, F.A. Volpe and 10 coauthors
Avoidance of Tearing Mode Locking and Disruption with Electro-Magnetic Torque Introduced by Feedback-Based Mode Rotation Control in DIII-D and RFX-mod
Nucl. Fusion **57**, 016035 (2017)
60. R. Sweeney, W. Choi, R.J. La Haye, S. Mao, K.E.J. Olofsson, F.A. Volpe
Statistical analysis of $m/n=2/1$ locked and quasi-stationary modes with rotating precursors at DIII-D

- Nucl. Fusion **57** 016019 (2017)
Preprint: arXiv:1606.04183
59. S.M.H. Mirhoseini, F.A. Volpe
Resistive sensor and electromagnetic actuator for feedback control of liquid metal walls in fusion reactors
Plasma Phys. Controll. Fusion **58**, 124005 (2016)
Preprint: arXiv:1604.07473
58. R. Sweeney, L. Frassinetti, P. Brunzell, R. Fridström, F.A. Volpe
Local measurement of error field using naturally rotating tearing mode dynamics in EX-TRAP T2R
Plasma Phys. Controll. Fusion **58**, 124001 (2016)
Preprint: arXiv:1604.00294
57. S.M.H. Mirhoseini, F.A. Volpe
Space- and time-resolved resistive measurements of liquid metal wall thickness
Rev. Sci. Instrum. **87**, 11D427 (2016)
Preprint: arXiv:1606.04008
56. O. Meneghini, F.A. Volpe
Full-wave feasibility study of anti-Radar diagnostic of magnetic field based on O-X mode conversion and oblique reflectometry imaging
Rev. Sci. Instrum. **87**, 11E120 (2016)
Preprint: arXiv:1606.04181
55. K.C. Hammond, R.R. Diaz-Pacheco, Y. Kornbluth, F.A. Volpe, Y. Wei
Onion-peeling inversion of stellarator images
Rev. Sci. Instrum. **87**, 11E119 (2016)
Preprint: arXiv:1606.03151
54. K. Nagasaki, Y. Nakamura, S. Kamioka, H. Igami, F. Volpe and 15 coauthors
Development of Electron Bernstein Emission Diagnostic for Heliotron J
Plasma Fusion Research **11**, 2402095 (2016)
51. F.A. Volpe, A. Hyatt, R.J. La Haye, M.J. Lanctot, J. Lohr, R. Prater, E.J. Strait, A. Welander
Avoiding Tokamak disruptions by applying static magnetic fields that align locked modes with stabilizing wave-driven currents
Phys. Rev. Lett., **115**, 175002 (2015)
Preprint: arXiv:1510.08932
27. H. Meyer, R.J. Akers, F. Alladio, F. Volpe and 106 coauthors
Overview of Physics Results from MAST
Nucl. Fusion **49**, 104017 (2009)
23. B. Esposito, G. Granucci, S. Nowak, F. Volpe and 10 coauthors
Disruption Control on FTU and ASDEX Upgrade with ECRH
Nucl. Fusion **49**, 065014 (2009)
21. F.A.G. Volpe, M.E. Austin, R.J. La Haye, J. Lohr, R. Prater, E.J. Strait and A.S. Welander
Advanced techniques for neoclassical tearing mode control in DIII-D
Phys. Plasmas **16**, 102502 (2009)
19. R. Prater, D. Farina, Yu. Gribov, R.W. Harvey, Y.R. Lin-Liu, E. Poli, A.K. Ram, A.P. Smirnov, F. Volpe, E. Westerhof, A. Zvonkov and ITPA Steady State Operations Topical Group
Benchmarking of codes for electron cyclotron heating and electron cyclotron current drive under ITER conditions
Nucl. Fusion **48**, 035006 (2008)

16. V.Shevchenko, G.Cunningham, A.Gurchenko, E.Gusakov, B.Lloyd, M.O'Brien, J.Preinhaelter, A.Saveliev, A.Surkov, F.Volpe, M.Walsh
Development of Electron Bernstein Wave Research in MAST
Fusion Science & Technology **52**, 202 (2007)
14. A.Mueck, L.Curchod, Y.Camenen, S.Coda, T.P.Goodman, H.P.Laqua, A.Pochelon, L.Porte, F.Volpe, TCV Team
Demonstration of Electron-Bernstein-Wave Heating in a Tokamak via O-X-B Double-Mode Conversion
Phys. Rev. Lett. **98**, 175004 (2007)
11. U.Tartari, G.Grosso, G.Granucci, F.Gandini, S.Garavaglia, G.Grossetti, A.Simonetto, V.Mellera, V.Muzzini, L.Lubyako, A.Shalashov, F.P.Orsitto, G.Ciccone and F.Volpe
Evolution of the millimeter-wave collective Thomson scattering system of the high-field tokamak Frascati Tokamak Upgrade
Rev. Sci. Instrum. **78**, 043506 (2007)
8. W.A.Houlberg, C.Gormezano, J.F.Artaud, F.Volpe and 20 coauthors
Integrated Modeling of the Current Profile in Steady-State and Hybrid ITER Scenarios
Nucl. Fusion **45**, 1309 (2005)
7. F.Wagner, S.Bäumel, J.Baldzuhn, F.Volpe and 49 coauthors
W7-AS: One step of the Wendelstein stellarator line
Phys. of Plasmas **12**, 072509 (2005)
4. H.P.Laqua, H.Maassberg, N.Marushchenko, F.Volpe, A.Weller, W7-AS Team, W.Kasperek and ECRH-Group
Electron-Bernstein-Wave Current Drive in an Overdense Plasma at the Wendelstein 7-AS Stellarator
Phys. Rev. Lett. **90**, 75003 (2003)
3. F.Volpe, H.P.Laqua and the W7-AS Team
BXO mode-converted electron Bernstein emission diagnostic (invited)
Rev. Sci. Instrum. **74**, 1409 (2003)

Talk summary

(for the full list of talks, please refer to <http://www.columbia.edu/~fv2168/Publ/1Pres.pdf>)

12 invited talks at international conferences, +3 invited talks by group members
 50 seminars and colloquia
 3 summer school lectures
 44 contributed talks at international conferences

Selected invited talks at international conferences

7. **Using 3D Fields to control Islands, aid ECCD-Stabilization and measure Error-Fields at DIII-D**
41st European Physical Society (EPS) Conf. on Plasma Physics, Berlin (Germany), June 2014
4. **Advanced Techniques for Neoclassical Tearing Mode Control in DIII-D**
50th Annual Meeting, Division of Plasma Phys., American Phys. Society (APS), Dallas, TX, Nov. 2008
2. **BXO mode-converted electron Bernstein emission diagnostic of electron temperature profiles at W7-AS Stellarator**
14th Topical Conf. High Temperature Plasma Diagnostics (HTPD), Madison, WI, July 2002

Patents

“Systems and methods for adjustable aberration lens”

US Publication No.: WO/2014/004918, US Publication Date: 03.01.2014

International Application No.: PCT/US2013/048337 International Filing Date: 27.06.2013

Teaching and lecturing

Courses

at Columbia University:

Fall	2015 -16	APPH E4200x	Physics of Fluids	undergraduate level also taught remotely on Columbia Video Network (CVN)
Spring	2012 -17	APPH E4018y	Applied Physics Laboratory ²	undergraduate level
Fall	2012 -14	APPH E6101y	Plasma Physics I	graduate level

at the University of Wisconsin, Madison:

Fall	2009 & Spring 2011	ECE 525	Introduction to Plasmas	undergrad level
Spring	2010 & Fall 2011	NE 427	Nuclear Instrumentation Laboratory	undergrad level

Lecturing

- Lecture on “Locked Mode Disruptions: Stability, Dynamics, Control” at the 9th ITER International School, “Physics of disruptions and control”, 20-24 March 2017 Aix-en-Provence (France)
- Lecture on “Waves in Plasmas” at the Mirai Summer School, 9-10 August 2012, Suzukaji (Japan)
- Lecture on “Plasma Waves and Heating” at the IPP Summer University on Plasma Physics and Fusion Research, 22-26 Sept. 2008 Garching (Germany)

Research Advising, Group Members

Current Group

- Post-docs
 2. **Wilkie Choi** (starting Aug. 2017) *Island Rotation and Locking in DIII-D Tokamak*
 1. **Sharad K. Yadav** (starting July 2017) *Modeling Ion Extraction from First Toroidal Electron-Cyclotron-Resonance Ion Source*
- Undergraduates
 6. **Jacob Austin** (2017-) *Tilted toroidal-field coil torsatron (CIRCUS)*
 5. **Shah Faisal Bin Mazhar** (2017-) *CIRCUS torsatron*
 4. **Veronica Mulila** (2017-) *CIRCUS torsatron*
 3. **Tommy Polanco** (2017-) *CIRCUS torsatron*
 2. **Albert Tai** (2017-) *CIRCUS torsatron*
 1. **Ruben Rui Diaz-Pacheco** (2015-) *CNT stellarator, CIRCUS torsatron, liquid metal exp.*

² Laboratory of vacuum, microwaves, solid state, plasmas, superconductivity and optics.

Previous Group Members

(managed a total of 47 people in the last 18 years, most of them in the last 9 years)

- Scientists
 2. **Claudia Caliri** (2013-14) *Ion extraction from toroidal plasma-based ion source for accelerators*
 1. **Myunghee Choi** (2013) *Numerical Modeling of Waves in Plasmas*
- Visitors and unfunded collaborators
 3. **Orso Meneghini** (collaborated from GA San Diego, 2013)
Full-wave Feasibility Study of Mode-Conversion Oblique Reflectometry Imaging of q-profile
 2. **Xabier Sarasola** (visited Columbia from IPP Greifswald, 2012)
Operation of CNT as a Neutral Stellarator
 1. **Alf Köhn** (visited UW from IPF Stuttgart, 2010) *Full-wave Modeling of EBWs in Pegasus*
- Post-docs
 3. **Seyyed (Taha) M.H. Mirhoseini** (2015-16) *Control of liquid metal flows and walls*
currently engineering manager at RDO Induction
 2. **Erik Olofsson** (2012-14) *Physics and Control of Locked Modes at DIII-D*
currently a scientist at General Atomics
 1. **Daisuke Shiraki** (2012-13) *Physics and Control of Locked Modes at DIII-D*
currently a scientist with Oak Ridge National Laboratory (ORNL) seconded to DIII-D
- PhD Theses
 3. **Wilkie Choi** (2013-17) *Magnetic feedback control of 2/1 locked modes in tokamaks*, starting a DOE-funded Columbia post-doc at DIII-D in Aug. 2017
 2. **Kenneth Hammond** (2012-17) *Heating and stability of neutral CNT stellarator plasmas*, currently at post-doc at IPP Greifswald, Germany
 1. **Ryan Sweeney** (2012-16) *Relationship between locked modes and disruptions in the DIII-D tokamak*, currently a Monaco Post-doctoral Fellow at ITER
- MSc students
 11. **Michel Doumet** (2013-14)
 10. **Anthony Clark** (2012-13)
 9. **Aileen Nielsen** (2012)
 8. **Chuteng Zhou** (2012)
 7. **William J. Capecchi** (2011-12)
 6. **Kent Haeger** (2011)
 5. **Sang-heum Kim** (2010)
 4. **Dinh Truong** (2010-12)
 3. **Sara Gallian** (2010)
 2. **Derek Thompson** (2009)
 1. **François Beau** (2009-10)
- Undergraduates
 25. **Tyler Cowan** (2016-17)
 24. **Jessica Li** (2016-17)
 23. **Justin Mann** (2015-17)
 22. **Ben Yehuda Israeli** (2013-17)
 21. **Yumou Wei** (2015-16)
 20. **Jacob B. Simmonds** (2015-16)
 19. **Alek Anichowski** (2015)
 18. **Lucas Randall Zeppetello** (2014-15)
 17. **Anji Zhao** (2014-15)
 16. **Omar Naziruddin Mahmood** (2014-15)
 15. **Elise Burch** (2013-14)
 14. **Yosef Kornbluth** (2013)
 13. **Adrian Febre** (2013)
 12. **Scott Massidda** (2012-13)
 11. **Samuel Reiss** (2010-11)
 10. **Mohamad Ali Bitar** (2010)

9. **Kyle Luh** (2010)
8. **Jonathan Jacquot** (2010)
7. **Shifan Mao** (2009-11)
6. **Jonathan Kessler** (2010)

5. **Hans Rinderknecht** (2007)
4. **2 groups of 2 students** (Technische Universität München, Plasma interferometry experiment (2000-01))

Service

Service to Columbia

- APAM Department Student Admissions and Financial Aid Committee member (2016-date).
- Applied Physics (AP) Program Committee member (2015-date).
- General AP Undergraduate Advisor (2015-date).
- Speaker & guide for Columbia Engineering Days on Campus, for admitted undergraduates (2014-date).
- Chair or member of 8 Thesis Defense committees and 6 Thesis Proposal committees (2012-date).
- Advisor of undergraduates majoring in AP, class of 2016 (2014-16).
- Organizer of weekly Plasma Physics Colloquia (2012-15 and 2016-date).
- Organizer of weekly APAM Research Conference seminars (2012-14).

Service to UW-Madison

Member of several Thesis Defense committees and Preliminary Examination committees (2009-11).

Service to Community

- 2014** Member of National Stellarator Coordination Committee
- 2013-date** Invited Leader of International Tokamak Programmatic Activities (ITPA) Working Group 11, "Control of Locked Modes".

Conference Organization

- *Member* of International Advisory Board of 5th and 4th International Conf. Frontiers in Diagnostic Technologies, Frascati (Italy), March-April 2018 and 2016
- *Member* of Program Committee of
 - 21th Workshop on MHD Stability Control, San Diego, CA (USA), Nov. 2016
 - 20th Workshop on MHD Stability Control, Princeton, NJ (USA), Nov. 2015
 - 19th Workshop on MHD Stability Control, Auburn, AL (USA), Nov. 2014
 - 18th Workshop on MHD Stability Control, Santa Fe, NM (USA), Nov. 2013
 - 16th Workshop on MHD Stability Control, San Diego, CA (USA), Nov. 2011
- *Co-chair*, with J. Sarff, of Local Organizing Committee 15th Workshop on MHD Stability Control combined with "US-Japan Workshop on 3D Magnetic Field Effects in MHD Control", Madison, WI (USA), Nov. 2010.

Reviewer for Funding Agencies

2016 -date	National Science Foundation (NSF)
2011 -date	US Department of Energy (DOE)
2016	Research Foundation Flanders (FWO)
2016	Italian Scientists and Scholars of North America Foundation
2014	Chilean National Commission for Scientific and Technological Research
2013	Swiss National Science Foundation
2012	Helmoltz Stiftung (Germany)
2004	Czech Science Foundation

Reviewer for Journals and Book Publishers

- Regular referee, since 2003, for *Nucl. Fusion* and for *Plasma Phys. Control. Fusion*.
- Ad-hoc referee, since 2006, for other 18 journals and book publishers:

<i>Appl. Phys. Lett.</i>	<i>J.Phys.D: Appl. Phys.</i>	<i>Plasma Sources Sci. T.</i>
<i>Fusion Eng. Design</i>	<i>J. Plasma Phys.</i>	<i>Radiation Eff. Defect S.</i>
<i>Fusion Sci. Technol.</i>	<i>Phys. Lett. A</i>	<i>Rev. Sci. Instrum.</i>
<i>IEEE Trans. Plasma Sci.</i>	<i>Phys. Plasmas</i>	<i>Springer Books</i>
<i>J. Appl. Phys.</i>	<i>Phys. Rev. E</i>	<i>Waves Random Complex</i>
<i>J Infrared Millim. Terahertz</i>	<i>Phys. Rev. Lett.</i>	
<i>Waves</i>	<i>Plasma Sci. Technol.</i>	

Outreach

2016-date	Scientific advisor for “Blackout”, a Sloan-awarded film on a nuclear fusion scientist, written and directed by Nick Singer
2014-date	School tours of CNT Plasma Laboratory.
2010-11	Judge at the CSEF and BSSEF Science Fairs (UW-Madison and Marquette University, Milwaukee, WI)
2006-07	”Scientist in the Classroom”: lectures and demonstrations organised by PPPL and General Atomics in schools of Southern California
2004-05	Toured dozens of groups (hundreds of visitors) from schools, universities and general public around MAST and COMPASS tokamaks at Culham, UK.

Other information

Professional Associations

2010 -date	US-BPO	United States Burning Plasma Organization
2008 -date	APS	American Physical Society and its Division of Plasma Physics (DPP)
2009 -16	UFA	University Fusion Association
2011 -12	ISSNAF	Italian Scientists and Scholars of North America Foundation
2011 -12	AAAS	American Association for the Advancement of Science
2010 -11	IEEE	Institute of Electrical and Electronics Engineers and its Microwave Theory and Techniques Society (MTT-S) and Nuclear & Plasma Sciences Society (NPSS)

Summer Schools attended

- All major schools in plasma physics and controlled fusion:
Greifswald (1997), Trieste (1999), Carolus Magnus (2001), Culham (2004).
- Specialistic schools in plasma physics:
Ionospheric Plasma Physics (Greifswald, Germany, 2004), *MAST Session Leader¹ Training* (Culham, UK, 2004), EFDA “GOTiT” *Course on Gyrokinetics* (Garching, Germany, 2008), *Instabilities in Laboratory, Space and Astrophysical Plasmas* (UCLA, USA, 2008),
- Scientific software training:
FEMLAB (2004), LabView (2010), COMSOL (2010).
- Other:
Advanced Turbulent Flow Computations (CISM Udine, Italy, 1998), *Magnets, Cryogenics, Thermometry and Vacuum* (Oxford Instruments, UK, 2004), *Bayesian Analysis* (Culham, UK, 2005), *Project Management* (Greifswald, Germany, 2006), STEM Education Scholars Program by CIRTLL (Nashville, USA, 2009), CERN Accelerator School on “RF for Accelerators” (Ebeltoft, Denmark, 2010).

Languages

In rough order from highest to lowest fluency.

Only most advanced class or certificate is indicated for each language.

- | | | |
|----------------------|----------------|---|
| 1) Italian | | Mother tongue |
| 2a) English | 2004 | Certif. in English Language Skills (CELS) “Higher”, English for Speakers of Other Languages (ESOL), University of Cambridge |
| 2b) Spanish | 2006-07 | Spanish classes at the University of California San Diego “Extension” |
| 4) German | 2000 | <i>Zertifikat Deutsch</i> , Goethe Institut München |
| 5) French | 2016 | 20% fluent on DuoLingo |
| 6) Portuguese | 2016 | 17% fluent on DuoLingo |
| 7) Japanese | 2012 | Introductory classes at Amity College New York and Kyoto University |