# NicolaVianello

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#### Work

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## interests

Plasma physics, non-linear dynamics, turbulence, Fusion energy, Astrophysical plasmas, dynamics in social system

## **Education and Qualifications**

1994 **High School, 56 out 60** 

Liceo Scientifico U.Morin, Venezia

1994-1999 Laurea in Fisica,

M.Sc. in Physics magna cum Laude

Universitá degli Studi di Padova

Thesis title: Trasporto di particelle ed energia per effetto di turbolenza elettro-

statica in plasmi confinati in configurazione Reversed Field Pinch

Topics: Electrostatic anomalous transport. Sheared Flows. Active modification of boundary flow through edge biasing

2000-2002 Ph.D in Energetics

Universitá degli Studi di Padova

Thesis title: Self-organization phenomena and coherent structure generation in magnetized plasmas

Topics: Electromagnetic turbulence in Reversed Field Pinches and Tokamaks. Anomalous transport. Self Organized Criticality

## **Further Education**

Oct 2000 International School of Plasma Physics

and Ultrafast Optics Capri, Italy

Sept 2001 5<sup>th</sup> Carolus Magnus Euro-Summer School

on Plasma and Fusion Energy Physics Badhonnef, Germany

Jan 2002 International School on Topics in Nonlinear Dynamics Venice, Italy

Jun 2011 **5**<sup>th</sup> International ITER Summer School on MHD

and energetic particles

Aix-en-Provence, France

# **Employment**

03-10 1999 **Consorzio RFX** 

Research Fellow

Padova, Italy

11-2002

04-2003 Consorzio RFX

Padova, Italy

Research Fellow

05-2003

12-2005	Consorzio RFX Research Scientist	Padova, Italy
01-2006 07-2009	Consorzio RFX Research Scientist, Permanent staff	Padova, Italy
07-2009 Date	Consiglio nazionale delle Ricerche c/o Consorzio RFX Research Scientist, permanent staff	Padova, Italy

# **Further experiences**

03-06 2001	<b>Visiting Scientist</b> under EURATOM-Mobility	Royal Institute of Technology Stockholm, Sweden Staff Movement
05-06 2002	<b>Visiting Scientist</b> under EURATOM-Mobility	Royal Institute of Technology Stockholm, Sweden Staff Movement
03-04 2003	<b>Visiting Scientist</b> under EURATOM-Mobility	Royal Institute of Technology Stockholm, Sweden Staff Movement
04-06 2004	<b>Visiting Scientist</b> under EURATOM-Mobility	Royal Institute of Technology Stockholm, Sweden Staff Movement
10-11 2005	<b>Visiting Scientist</b> under EURATOM-Mobility	Risø National Laboratory, Risø Denmark Staff Movement
02 2008	<b>Visiting Scientist</b> under EURATOM-Mobility	Max Plank Institüt für Plasma Physik, Garching Germany Staff Movement
05 2009	<b>Visiting Scientist</b> under EURATOM-Mobility	Max Plank Institüt für Plasma Physik, Garching Germany Staff Movement
11 2009	<b>Visiting Scientist</b> under EURATOM-Mobility	CRPP, EPFL, Lausanne Switzerland Staff Movement
03 2011	<b>Visiting Scientist</b> under EURATOM-Mobility	Royal Institute of Technology Stockholm, Sweden Staff Movement
04 2011	<b>Visiting Scientist</b> under EURATOM-Mobility	The National Fusion Laboratory CIEMAT, Madrid Spain Staff Movement
12 2011	<b>Visiting Scientist</b> under EURATOM-Mobility	The National Fusion Laboratory CIEMAT, Madrid Spain Staff Movement
05 2011	<b>Visiting Scientist</b> under EURATOM-Mobility	, ,
02-03 2012	Staff Secondment at JET	Culham Centre for Fusion Science, Culham, Oxford UK
07-11 2013	Staff Secondment at JET	Culham Centre for Fusion Science, Culham, Oxford UK

# **National and International Conferences**

09 2000	EU-US Turbulence Task Force Meeting workshop	Varenna, Italy
04 2002	7 <sup>th</sup> Easter Plasma Meeting	Torino, Italy
	Oral presentation see reference [C1]	

06 2002	$29^{th}$ EPS Conference on Plasma Physics and Controlled Fusion	Montreux, Switzerlad
10 2003	<b>45</b> $^{th}$ <b>APS-Division of Fusion Plasma Physics Conference</b> Poster see	Albuquerque, NM, USA
05 2004	10 <sup>th</sup> IEA/RFP Workshop Oral presentation see [C4]	Padova, Italy
06 2004	31 $^{th}$ EPS Conference on Plasma Physics Poster see [B16, B14]	London, UK
09 2004	<b>EU-US Turbulence Task Force (TTF) workshop</b> Oral presentation see [C3]	Varenna, Italy
11 2004	${f 46}^{th}$ APS-Division of Fusion Plasma Physics Conference Oral presentation see [C2]	Savannah, GA, USA
07 2005	${f 8}^{th}$ International Workshop on the Interrelationship between PL Laboratory and Space Oral presentation see [C6]	asma Experiments in Tromsö, Norwey
09 2005	<b>11</b> <sup>th</sup> <b>IEA/RFP Workshop</b> Oral presentation see [C5]	Madison, WI, USA
06 2006	${\bf 33}^{th}$ EPS Conference on Plasma Physics and Controlled Fusion Poster presentation see [B29]	Rome, Italy
10 2006	<b>48</b> $^{th}$ <b>APS-Division of Fusion Plasma Physics Conference</b> Poster presentation see [B30]	Philadelphia, PN, USA
04 2007	$12^{th}$ US-EU Transport Taskforce Workshop Oral presentation see [C8]	San Diego, CA, USA
09 2007	Momentum transport in jets, disks and laboratory plasmas	Alba, Italy
06 2008	${\bf 35}^{th}$ EPS Conference on Plasma Physics Oral presentation see [B37]	Hersonissos, Greece
06 2008	<b>EFTSOMP2008 - Workshop on Electric Fields, Turbulence and Magnetized Plasmas</b> Oral presentation see [C11]	<b>Self-Organisation in</b> Hersonissos, Greece
09 2008	<b>EU-US Turbulence Task Force (TTF) workshop</b> Poster presentation	Copenhagen, Denmark
10 2008	<b>13</b> <sup>th</sup> <b>IEA/RFP Workshop</b> Oral presentation see [C10]	Stockholm, Sweden
03 2009	<b>Workshop on Cross-Scale Coupling in Plasmas</b> Oral presentation see [C14]	Cosenza, Italy
06 2009	35 $^{th}$ EPS Conference on Plasma Physics and Controlled Fusion Poster presentations see [B42, B41]	Sofia, Bulgaria
09 2009	$2^{nd}$ EFDA Transport Topical Group Meeting Oral presentations see [C13, C12]	JET, Culham, UK
04 2010	14 <sup>th</sup> IEA/RFP Workshop	Padova, Italy
11 2010	${\bf 52}^{th}$ APS-Division of Fusion Plasma Physics Conference Oral presentation see [B53] and Poster presentation see [B	Chicago, IL, USA
10 2011	$15^{th}$ IEA/RFP Workshop Oral presentation see [C15]	Madison, WI, USA
07 2012	<b>EFTSOMP2010 - Workshop on Electric Fields, Turbulence and Magnetized Plasmas</b> Invited lecture, see [C16]	<b>Self-Organisation in</b> Stockholm, Sweden

10 2012	24th IAEA Fusion Energy Conference	San Diego, CA, USA
	Poster presentation see [B68]	
03 2013	6th International Workshop on Stochasticity in Fusion Plasmas	Jülich Germany

### **Invited lectures**

Oral presentation see [C17]

July 2000 **Workshop on Electric Field ad Self-Organisation in Magnetized Plasmas**Stockholm, Sweden. Invited lecture title *The role of 3D fields on edge and SOL turbulence* 

# **Competition**

**05 2009** Public selection (Ref. 364/13) held by Consiglio Nazionale delle Ricerche. Advisor Committee:

- Prof. A. Fasoli, Full Professor, Ecole Polytechnique Federal Lausanne, Switzerland
- Dr. V. Antoni, Director Istituto Gas Ionizzati, Consiglio Nazionale delle Ricerche
- Dr. D. Farina, Research Scientist, Istituto di Fisica del Plasma, Consiglio Nazionale delle ricerche, Milano

The competition included two written exams and one colloquium. The candidate results the winner of the competition with a final mark of 104.5/120

# **Skills**

#### IT skills

	s Linux, Unix, Windows, Mac OsX, Open VMS Fortran 77/90, IDL (Interactive Data Language), Python, Bash		
Office	Scripting Gnuplot, GIT Version Control Microsoft Office (Word, Excel, Powerpoint), iWork, MEX, web, emails Adobe inDesign, Adobe Illustrator		

#### **Technical skills**

(i)	Competences in data analysis and interpretation	
(ii)	Competences in image processing	
(iii)	Competences in fluid numerical modeling	
(iv)	Competences in designing and projecting electrostatic and magnetic	
(v)	plasma diagnostics Competences in UHV technology and plasma facing and ultra high vac-	
(*)	uum compliant materials	
(vi)	Competences in data acquisition through MDSPLUS technology	

# Languages

Mother toungue(s) Italian Self-assesment Accord

According to European Level

 English
 Understanding
 Speaking
 Writing

 Listening
 Reading
 Listening
 Reading

 C1
 Proficient
 C2
 Proficient
 C2
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# **Duties and Responsibilities**

- 2007 -Responsible Scientist for edge manipulators in RFX-mod device. Responsibilities implies the maintenance and improvement of the two manipulators used in RFX-mod for the insertion of edge probes, including maintenance and improvement of the probe heads. Development of new complex probe head, project which has required the coordination between design, mechanical and diagnostic technicians.
- 2009 Task force leader in RFX-mod experiment for task force *Particle, Momentum and energy transport*. The task force was in charge to implement experimental proposals aimed to the comprehension of physical mechanisms which regulate particle momentum and energy transport in RFX-mod. The task force leaders together with the Scientific Coordinators take part to the decision processes concerning the experimental program of the machine, deciding priorities and objectives.
- 2010 Task force leader in RFX-mod experiment for task force *Physics integration* for high performance RFP. The task force aimed to coordinate all the efforts devoted to the comprehension of the physical mechanism behind the appearance of improved confinement regimes in RFX-mod, to establish the physical requirement for a controlled achievement of h-mode confinement regime and to explore all the still open basic physics issues whose knowledge could help to improve plasma performances. As in the previous year the task force leaders take part to the scientific program schedule, coordinating in particular the activities for the high current performance operations.
- 2011 Coordinator of the EFDA working group 3D field effects in edge and SOL and diagnostic development under EFDA Transport Topical Group. This working group has been established to coordinate the effort promoted by different EFDA associations on the following subject:
  - 1. Investigation on the effect of non-axisymmetric fields on the filamentary structures (L and H-mode regimes)
  - 2. Investigation into changes in edge transport due to the application of 3D fields
  - 3. Characterization of the edge turbulence in these 3D situations (including effect of ion temperature and 3D fast particle losses)
  - 4. Edge turbulence and transport modeling by incorporating 3D field effects into the codes.
  - 5. Comparison studies between tokamaks, stellarators and RFPs on the above topics.

The coordinators promote exchange of results between different association and the definition of common objectives which facilitate the comparison between different devices.

2012 Member of the Program committee of the 17th Joint EU-US Transport Task Force Meeting in combination with the 4th EFDA Transport Topical Group meeting, 3-6 September 2012, Padova, Italy

- 2013 Scientific Coordinator of back-up experiment B13-19 Investigation of M-Mode on JET campaigns C31-C34. This implies the coordination of the experimental activity in order to investigate the so called M-Mode, a particular state of the plasma characterized by a medium grade confinement accompanied by the appearance of an alfvenic like oscillations. Coordinations means assigning activities to the experimental team, plan the possible experimental campaign to be designed in collaboration with Session leaders, establish scientific objectives and monitoring scientific activities.
- **2014** Scientific Coordinator of experiment AUG14-2.2.3, SOL filamentary transport at high density, under the MST1 Eurofusion Work-Packages

# **Pedagogical activity**

#### **Teaching**

- 2008-2009 **Assistant for the course Fluid and Plasma Physics**tenured Prof. T. Bolzonella. Tot. 4 h. Seminar on MHD and Fluid turbulence. A summary is presented on the theory and experimental results on turbulence, both in ordinary fluid and in plasmas. A description of the most recent results regarding turbulence and eddy's characterization in thermonuclear relevant plasmas is given. Exercises on fluid turbulence
- 2010 **Assistant for the course Fluid and Plasma Physics**University of Padova tenured Prof. T. Bolzonella. Tot. 6 h. Tangential stresses in ordinary fluid. Seminar on MHD and fluid turbulence (see previous years)
- 2011-2012 **Assistant to the course Fundamental of Plasma Physics**Tenured Prof. G. Serianni. Tot 8h. Lectures on plasma waves including Plasma Oscillations, Langmuir waves, Ion acoustic waves, Upper and Lower Hybrid waves, Whistler waves and MHD waves (magneto-acoustic and Alfvén waves)
- 2012-2013 Assistant to the course Fundamental of Plasma Physics University of Padova Tenured Prof. G. Serianni. Tot 10h. Lectures on plasma waves including Plasma Oscillations, Langmuir waves, Ion acoustic waves, Upper and Lower Hybrid waves, Whistler waves and MHD waves (magneto-acoustic and Alfvén waves), plasma stability
- Joint Research Doctorate and European Interuniversity Doctoral Network on Fusion
  Science and Engineering
  University of Padova
  Lecturer for basic Physics course. Tot 4h. Lecture on Transport and Turbulence

#### **Supervising**

#### 2007 **Supervisor for Bachelor Thesis in Physics**

University of Padova

Candidate: Alessandro Scaggion

**Thesis title:** Electrostatic fluctuations characterization in RFX-mod experiment in different experimental condition

**Thesis subject:** Characterization of floating potential measurements as obtained from an internal array of sensors in different discharge conditions highlighting dependence on equilibrium and density.

#### 2009 Supervisor for M.Sci Thesis in Physics

University of Padova

Candidate: Alessandro Scaggion

Thesis title: Filamentary structures in the edge turbulence of fusion device

**Thesis subject:** Characterization of turbulence electromagnetic structures in two different devices: RFX-mod Reversed Field Pinch experiment, characterized by the presence of Drift-Alfvén filaments, and ASDEX-Upgrade tokamak, with emphasis on type I ELM's filaments.

#### 2011 **Supervisor for Bachelor Thesis in Physics**

University of Padova

Candidate: Alberto Mazzi

**Thesis title:** Experimental evaluation of toroidal velocity distribution in the edge region of RFX-mod and its impact on high density regimes

**Thesis subject:** Experimental determination of the spatio-temporal distribution of the toroidal velocity in RFX-mod and its relationship with edge magnetic topology. The strong link between magnetic islands and plasma flow distribution is addressed.

#### 2013 **Supervisor for M.Sci. Thesis in Physics**

University of Padova

Candidate: Alberto Mazzi

**Thesis title:** Analysis of vorticity coherent structures in magnetically confined plasmas

**Thesis subject:** Experimental characterization of vorticity and parallel current associated to the existence of plasma structure at large scales (associated to MHD activity) and small scales (associated to fully developed MHD turbulence)

# Summary of research interest

I've been involved in fusion plasma science since my M.Sci. thesis in Physics in 1999. During these 13 years I've tried to expand as much as possible my personal research skills focusing in particular on collection, analysis, interpretation and modeling of experimental data collected in fusion oriented experiments (Reversed Field Pinches, Tokamaks and Stellarators), with particular emphasis on the comparison with theoretical and numerical results. Main research subjects may be summarized as follow:

- (a) Electromagnetic turbulence induced transport:, with emphasis on anomalous transport studies induced by different source of turbulence: electrostatic as Drift-induced or interchange induced transport, or electromagnetic including the role of magnetic flutter fluxes in the mechanism of particle and energy losses
- (b) Statistical analysis of plasma turbulence: the topic allowed me to get confident with advanced statistical tool (as Wavelet Transforms, Local Intermittency Measurements, Waiting Time distribution) and with dynamical system model as Self-Organized Criticality (SOC) systems, shell-models
- (c) Blobs and ELM filaments: non linear coherent structures arising as a non-linear evolution of plasma instabilities have been experimentally investigated. The research includes studies on the generation and evolution of these structures including their parallel dynamics with emphasis on turbulent blobs and ELM filaments
- (d) Sheared flow generation and non linear interaction between turbulence and sheared flows including experimental investigation of the role of Maxwell and Reynolds stress in the momentum generation of edge flow in Reversed Field Pinches
- (e) Numerical modeling of electromagnetic plasma turbulence using fluid approach
- **Magnetic topology and its relation with plasma flow**, with emphasis on the effect of non-axysimmetric magnetic field perturbation on kinetic properties of the plasma, as plasma flow, ambipolar electric field and Plasma Wall Interaction
- **Beam plasma interaction** with emphasis on Alfvén instabilities, Energetic Particle Driven instabilities, and turbulent transport of energetic ions

Among the results the following should be highlighted:

- (i) First experimental proof of non applicability of *Self Organized Criticality* paradigm to edge plasma turbulence [A8, A3]
- (ii) First experimental evidence of non-linear generation of edge flow in Reversed Field Pinches through Reynolds stress mechanism [A29, A28]
- (iii) First experimental measurements of parallel current associated to coherent structures in a fusion relevant plasma [A53]
- (iv) First experimental evidence of the existence of a particular class of coherent structure, named *Drift-Kinetic Alfvén vortices*, arising because of the non linear coupling of Drift and Kinetic Alfvén waves in a laboratory plasma [A62]. This type of structure has been previously detected in the magnetosphere
- (v) First experimental estimate of parallel current associated to Edge Localized Modes filament [A75]
- (vi) First experimental measurements of 2D current distribution associated to plasma blobs [A64]
- (vii) Experimental evidence of transition towards helical states in high current Reversed Field Pinch operation [A45]

In all my carrier I've always tried to conjugate a strong experimental insight on the data collection, participating in all the experimental activities mandatory in order to obtain useful experimental results, and a rigorous theoretical approach in the data analysis and interpretation, using theories and numerical tools as a framework to understand real plasma signals. This approach helped me to build a bridge between theories and experiments, a necessary effort in order to understand complex plasma dynamics.

## **Active collaborations**

Institute	Contact person	Subject
Department of Physics,	V. Naulin and J. Ras-	Edge turbulence in tokamaks, includ-
DTU Technical University	mussen	ing ELM filaments. Fluid turbulence
of Denmark		codes
CRPP Lausanne	I. Furno	Blobs in Simple Toroidal Torus
CIEMAT, Spain	C. Hidalgo	Edge filament structures in Stellara-
		tors
KTH Stockholm	H. Bergsaker and L.	Characterization of the edge region of
	Frassinetti	RFP experiment Extrap-T2R
MIT, Boston	J. Terry	Edge turbulence in Alcator C-Mod
IPP, Garching	H. W. Müller and D. Car-	Electromagnetic turbulence at the
	ralero	edge of ASDEX-Upgrade, ELMs
JET, Culham	E. Solano	Investigation of M-Mode on JET

## **Other**

I'm regular referee for Plasma Physics and Controlled Fusion, Nuclear Fusion, New Journal of Physics

# **Publications**

I have authored a total number of 87 Articles in peer reviewed journal, 74 conference proceedings and personally presented 17 oral contribution.

h-index factor: 18 according to ISI Web of Knowledge (last update April 28, 2014)

#### article in peer-review journal

- [A1] V. Antoni, R. Cavazzana, L. Fattorini, E. Martines, G. Serianni, M. Spolaore, L. Tramontin, and N. Vianello "Effects of pulsed poloidal current drive on the edge region of a reversed field pinch plasma", Plasma Physics and Controlled Fusion 42, 893–904, (2000).
- [A2] V. Antoni, E. Martines, D. Desideri, L. Fattorini, G. Serianni, M. Spolaore, L. Tramontin, and N. Vianello "Electrostatic transport reduction induced by flow shear modification in a reversed field pinch plasma", Plasma Physics and Controlled Fusion **42**, 83–90, (2000).
- [A3] V. Antoni, V. Carbone, R. Cavazzana, G. Regnoli, N. Vianello, E. Spada, L. Fattorini, E. Martines, G. Serianni, M. Spolaore, L. Tramontin, and P. Veltri "Transport processes in reversed-field-pinch plasmas: Inconsistency with the self-organized-criticality paradigm", Phys. Rev. Lett. 87, 045001, (2001).
- [A4] V. Antoni, V. Carbone, E. Martines, G. Regnoli, G. Serianni, N. Vianello, and P. Veltri "Electrostatic turbulence intermittency and MHD relaxation phenomena in a RFP plasma", Europhys Lett **54**, 51–57, (2001).
- [A5] V. Antoni, M. Valisa, L. Apolloni, M. Bagatin, W. Baker, O. Barana, R. Bartiromo, P. Bettini, A. Boboc, T. Bolzonella, A. Buffa, A. Canton, S. Cappello, L. Carraro, R. Cavazzana, G. Chitarin, S. Costa, F. D'Angelo, S. D. Bello, A. D. Lorenzi, D. Desideri, D. F. Escande, L. Fattorini, P. Fiorentin, P. Franz, E. Gaio, L. Garzotti, L. Giudicotti, F. Gnesotto, L. Grando, S. Guo, P. Innocente, A. Intravaia, R. Lorenzini, A. Luchetta, G. Malesani, G. Manduchi, G. Marchiori, L. Marrelli, P. Martin, E. Martines, S. Martini, A. Maschio, A. Masiello, F. Milani, M. Moresco, A. Murari, P. Nielsen, M. O'Gorman, S. Ortolani, R. Paccagnella, R. Pasqualotto, B. Pegourie, S. Peruzzo, R. Piovan, N. Pomaro, A. Ponno, G. Preti, M. Puiatti, G. Rostagni, F. Sattin, P. Scarin, G. Serianni, P. Sonato, E. Spada, G. Spizzo, M. Spolaore, C. Taliercio, G. Telesca, D. Terranova, V. Toigo, L. Tramontin, N. Vianello, M. Viterbo, L. Zabeo, P. Zaccaria, P. Zanca, B. Zaniol, L. Zanotto, E. Zilli, and G. Zollino "Transport mechanisms and enhanced confinement studies in RFX", Nucl. Fusion 41, 431–436, (2001).
- [A6] E. Martines, M. Spolaore, V. Antoni, G. Regnoli, N. Vianello, R. Cavazzana, G. Serianni, and L. Tramontin "Ex B velocity shear and intermittent structures in RFX", Czechoslovak Journal Of Physics 51, 983–993, (2001).
- [A7] G. Serianni, V. Antoni, H. Bergsåker, P. R. Brunsell, J. Drake, M. Spolaore, H. Satherblom, and N. Vianello "Electrostatic fluxes and plasma rotation in the edge region of EXTRAP-T2R", Czechoslovak Journal Of Physics **51**, 1119–1127, (2001).
- [A8] E. Spada, V. Carbone, R. Cavazzana, L. Fattorini, G. Regnoli, N. Vianello, V. Antoni, E. Martines, G. Serianni, M. Spolaore, and L. Tramontin "Search of self-organized criticality processes in magnetically confined plasmas: Hints from the reversed field pinch configuration", Phys. Rev. Lett. 86, 3032–3035, (2001).
- [A9] M. Spolaore, V. Antoni, M. Bagatin, D. Desideri, L. Fattorini, E. Martines, G. Serianni, L. Tramontin, and N. Vianello "Study of edge plasma properties comparing operation in hydrogen and helium in RFX", Journal of Nuclear Materials 290-293, 729–732, (2001).
- [A10] V. Carbone, R. Cavazzana, V. Antoni, L. Sorriso-Valvo, E. Spada, G. Regnoli, P. Giuliani, N. Vianello, F. Lepreti, R. Bruno, E. Martines, and P. Veltri "To what extent can dynamical models describe statistical features of turbulent flows?", Europhys Lett 58, 349–355, (2002).
- [A11] P. Martin, S. Martini, V. Antoni, L. Apolloni, M. Bagatin, W. Baker, O. Barana, R. Bartiromo, P. Bettini, A. Boboc, T. Bolzonella, A. Buffa, A. Canton, S. Cappello, L. Carraro, R. Cavazzana, G. Chitarin, S. Costa, F. D'Angelo, S. D. Bello, A. D. Lorenzi, D. Desideri, D. F. Escande, L. Fattorini, P. Fiorentin, P. Franz, E. Gaio, L. Garzotti, L. Giudicotti, F. Gnesotto, L. Grando, S. Guo, P. Innoccente, A. Intravaia, R. Lorenzini, A. Luchetta, G. Malesani, G. Manduchi, G. Marchiori, L. Marrelli, E. Martines, A. Maschio, A. Masiello, F. Milani, M. Moresco, A. Murari, P. Nielsen, M. O'Gorman, S. Ortolani, R. Paccagnella, R. Pasqualotto, B. Pegourie, S. Peruzzo, R. Piovan, N. Pomaro, A. Ponno, G. Preti, M. Puiatti, G. Rostagni, F. Sattin, P. Scarin, G. Serianni, P. Sonato, E. Spada, G. Spizzo,

- M. Spolaore, C. Taliercio, G. Telesca, D. Terranova, V. Toigo, L. Tramontin, M. Valisa, N. Vianello, M. Viterbo, L. Zabeo, P. Zaccaria, P. Zanca, B. Zaniol, L. Zanotto, E. Zilli, and G. Zollino "New insights into MHD dynamics of magnetically confined plasmas from experiments in RFX", Nucl. Fusion **42**, 247–257, (2002).
- [A12] E. Martines, V. Antoni, R. Cavazzana, G. Regnoli, G. Serianni, M. Spolaore, N. Vianello, M. Hron, and J. Stockel "Coherent structures in the plasma edge turbulence of the RFX and CASTOR experiments", Czechoslovak Journal Of Physics **52**, 13–24, (2002).
- [A13] M. Spolaore, V. Antoni, R. Cavazzana, G. Regnoli, G. Serianni, E. Spada, N. Vianello, H. Bergsåker, and J. Drake "Effects of ExB velocity shear on electrostatic structures", Phys. Plasmas 9, 4110–4113, (2002).
- [A14] L. Tramontin, L. Garzotti, V. Antoni, L. Carraro, D. Desideri, P. Innocente, E. Martines, G. Serianni, M. Spolaore, and N. Vianello "Particle balance during edge biasing experiments in the reversed field pinch RFX", Plasma Physics and Controlled Fusion 44, 195–204, (2002).
- [A15] N. Vianello, M. Spolaore, G. Serianni, H. Bergsåker, V. Antoni, and J. Drake "Properties of the edge plasma in the rebuilt Extrap-T2R reversed field pinch experiment", Plasma Physics and Controlled Fusion 44, 2513–2523, (2002).
- [A16] V. Antoni, M. Bagatin, G. Serianni, N. Vianello, M. Zuin, F. Paganucci, P. Rossetti, and M. Andrenucci "Plasma Fluctuations in an Applied Field MPD Thruster", AIP Conf. Proc. 669, 302–305, (2003).
- [A17] V. Antoni, H. Bergsåker, G. Serianni, M. Spolaore, N. Vianello, R. Cavazzana, G. Regnoli, E. Spada, E. Martines, M. Bagatin, and J. Drake "Anomalous particle transport and flow shear in the edge region of RFP's", Journal of Nuclear Materials 313-316 IS -, 972–975, (2003).
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## **Declaration**

I hereby declare that the above information are true and correct to the best of my knowledge and belief and in the event of any information being found false or incorrect, my candidature will be liable to be canceled.

Padova, April 28, 2014

(Nicola Vianello)