Nicola Vianello

Curriculum Vitae

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Personal Information

Name:	Nicola Vianello
Date and Place of Birth:	Mestre-Venezia, 14 August 1975
Citizenship:	Italian
Home address:	via Isonzo 70, 35143, Padova, Italy
Work address:	c/o Consorzio RFX, Associazione Euratom-ENEA sulla Fusione C.so Stati Uniti 4, 35127 Padova, Italy

Education and Qualifications

1994	**High School**	Liceo Scientifico U. Morin, Mestre, Venezia, *56 out 60*
March 1999	***Laurea in Fisica*** **(M.Sci Physics)**	Università degli Studi di Padova, Padova, Italy *110 out 110 cum Laude*
	Thesis Title:	***Trasporto di particelle ed energia per effetto di turbolenza elettrostatica in plasmi confinati in configurazione Reversed Field Pinch*** (Particle and energy transport induced by electrostatic turbulence in Reversed Field Pinch plasmas)
	Supervisor:	Prof. S. Lo Russo, Dr. V. Antoni
	Topics:	Electrostatic anomalous transport. Sheared Flows. Active modification of boundary flow through edge biasing
March 2002	**Ph.D in Energetics**	Università degli Studi di Padova, Padova, Italy
	Thesis Title:	***Self-organization phenomena and coherent structure generation in magnetized plasmas***
	Supervisor:	Prof. A. Buffa, Dr. V. Antoni
	Topics:	Electromagnetic turbulence in Reversed Field Pinches and Tokamaks. Anomalous transport. Self Organized Criticality.

Further Education

2000	October	**International School of Plasma Physics and Ultrafast Optics**	Capri, Italy
2001	September	**5^{th} Carolus Magnus Euro-Summer School on Plasma and Fusion Energy Physics**	Badhonnef, Germany
2002	January	**International School on Topics in Nonlinear Dynamics**	Venice, Italy
2011	June	**5^{th} International Iter Summer School MHD and Energetic Particles**	Aix-en-Provence, France

Employment

March-October 1999	**Consorzio RFX, Padova, Italy**	Research fellow
November 2002 - April 2003	**Consorzio RFX, Padova, Italy**	Research fellow
May 2003-December 2005	**Consorzio RFX, Padova, Italy**	Research Scientist
January 2006 - July 2009	**Consorzio RFX, Padova, Italy**	Research Scientist, Permanent position
July 2009 - Date	**Consiglio Nazionale delle Ricerche** (***Research National Institute***) **Padova, Italy**	Researcher, Permanent position *See Competion section*

Further experiences

2001	5 March-15 June	Visiting scientist under	Royal Institute of Technology

		EURATOM-Mobility staff movement	Stockholm, Sweden
2002	1 May-30 June	Visiting scientist under	Royal Institute of Technology
		EURATOM-Mobility staff movement	Stockholm, Sweden
2003	2 March-30 April	Visiting scientist under	Royal Institute of Technology
		EURATOM-Mobility staff movement	Stockholm, Sweden
2004	19 April -19 June	Visiting scientist under	Royal Institute of Technology
		EURATOM-Mobility staff movement	Stockholm, Sweden
2005	16 October -	Visiting scientist under	Risø National Laboratory
	19 November	EURATOM-Mobility staff movement	Risø, Denmark
2008	11 - 15 February	Visiting scientist under	Max-Planck Institut für Plasmaphysik
		EURATOM-Mobility staff movement	Garching, Germany
2009	12 - 15 May	Visiting scientist under	Max-Planck Institut für Plasmaphysik
		EURATOM-Mobility staff movement	Garching, Germany
2009	09 - 13 November	Visiting scientist under	Centre der Recherches en Physique des
		EURATOM-Mobility staff movement	Plasmas, EPFL, Lausanne, Switzerland
2011	07 - 11 March	Visiting scientist under	Royal Institute of Technology
		EURATOM-Mobility staff movement	Stockholm, Sweden
2011	13 - 15 April	Visiting scientist under	The National Fusion Laboratory, CIEMAT
		EURATOM-Mobility staff movement	Madrid, Spain
2011	23 - 27 May	Visiting scientist under	Max-Planck Institut für Plasmaphysik
		EURATOM-Mobility staff movement	Garching, Germany
2012	06 February -	Secondment Staff	JET, Culham Centre for Fusion Science
	30 March		Culham, Oxford, UK

National and International Conferences

2000	September	**EU-US Turbulence Task Force (TTF) workshop**	Varenna, Italy
2002	April	**7th Easter Plasma Meeting**	Torino, Italy
2002	June	**29th EPS Conference on Plasma Physics and Controlled Fusion**	Montreux, Switzerland
2003	October	**45th APS-Division of Fusion Plasma Physics Conference**	Albuquerque, NM, USA
2004	May	**10th IEA/RFP Workshop**	Padova, Italy
2004	June	**31th EPS Conference on Plasma Physics**	London, UK
2004	September	**EU-US Turbulence Task Force (TTF) workshop**	Varenna, Italy
2004	November	**46th APS-Division of Fusion Plasma Physics Conference**	Savannah, GA, USA
2005	July	**8th International Workshop on the Interrelationship between Plasma Experiments in Laboratory and Space**	Tromsö, Norwey
2005	September	**11th IEA/RFP Workshop**	Madison, WI, USA
2006	June	**33th EPS Conference on Plasma Physics and Controlled Fusion**	Rome, Italy
2006	October	**48th APS-Division of Fusion Plasma Physics Conference**	Philadelphia, PN, USA
2007	April	**12th US-EU Transport Taskforce Workshop**	San Diego, CA, USA
2007	September	**Momentum transport in jets, disks and laboratory plasmas**	Alba, Italy
2008	June	**35th EPS Conference on Plasma Physics**	Hersonissos, Greece
2008	June	**EFTSOMP2008 - Workshop on Electric Fields, Turbulence and Self-Organisation in Magnetized Plasmas**	Hersonissos, Greece
2008	September	**EU-US Turbulence Task Force (TTF) workshop**	Copenhagen, Denmark
2008	October	**13th IEA/RFP Workshop**	Stockholm, Sweden
2009	March	**Workshop on Cross-Scale Coupling in Plasmas**	Cosenza, Italy
2009	June	**35th EPS Conference on Plasma Physics and Controlled Fusion**	Sofia, Bulgaria
2009	September	**2nd EFDA Transport Topical Group Meeting**	JET, Culham, UK
2010	April	**14th IEA/RFP Workshop**	Padova, Italy
2010	November	**52th APS-Division of Fusion Plasma Physics Conference**	Chicago, IL, USA

2011 October **15th IEA/RFP Workshop** Madison, WI, USA

Competition

May 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

Operating systems	Linux, Unix, Windows, Mac Os X, Open VMS
Programming	`Fortran 77/90`, `IDL` (Interactive Data Language), `Python`, `C`, `Bash Scripting` `COMSOL`, `Mathematica`, `Gnuplot`, `GIT Version Control`
Office	Microsoft Office (Word, Excel, Powerpoint), iWork, LaTeX, web, emails
Design	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 plasma diagnostics
(v) Competences in UHV technology and plasma facing and ultra high vacuum compliant materials
(vi) Competences in data acquisition through `MDSPLUS` technology

Languages

Language	Oral	Written
Italian	Native	Native
English	Fluent	Fluent

Pedagogical activities

Teaching

2008-2009 Assistant for the course *Fluid and Plasma Physics*
tenured Prof. Tommaso Bolzonella
Total h 4
Subject: 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*
tenured Prof. Tommaso Bolzonella
Total h 6
Subject: Tangential stress in ordinary fluids. Seminar on MHD and Fluid turbulence (see previous years)

2011-2012 Assistant for the course *Fundamentals of Plasma Physics*
tenured Prof. Gianluigi Serianni
Total h. 10
Subject: Plasma oscillations, Langmuir Waves, Ion Acoustic waves, Upper and Lower hybrid waves, Whistler waves, MHD waves (magneto-acoustic, Alfvén waves)

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 devices*
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.

Duties and Responsibilities

2010 - Date 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 programme 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 programme 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 Programme commitee 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

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
- **(f)** **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
- **(g)** **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 [8, 3]
- **(ii)** First experimental evidence of non-linear generation of edge flow in Reversed Field Pinches through Reynolds stress mechanism [29, 28]

(iii) First experimental measurements of parallel current associated to coherent structures in a fusion relevant plasma [53]
(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 [62]. This type of structure has been previously detected in the magneto-sphere
(v) First experimental estimate of parallel current associated to Edge Localized Modes filament [75]
(vi) First experimental measurements of 2D current distribution associated to plasma blobs [64]
(vii) Experimental evidence of transition towards helical states in high current Reversed Field Pinch operation [45]

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**
RisøNational Laboratory	V. Naulin & J. Rasmussen	Edge turbulence in tokamaks, including ELM filaments. Fluid turbulence codes
CRPP Lausanne	I. Furno	Blobs in Simple Toroidal Torus
CIEMAT, Spain	D. Carallero & C. Hidalgo	Edge filament structures in Stellarators
KTH Stockholm	H. Bergsaker & L. Frassinetti	Characterization of the edge region of RFP experiment Extrap-T2R
MIT, Boston	J. Terry	Edge turbulence in Alcator C-Mod
IPP, Garching	H. W. Müller	Electromagnetic turbulence at the edge of ASDEX-Upgrade, ELMs

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 143 papers and conference proceedings.
h-index factor: 17 according to ISI Web of Knowledge (last update Monday 30th April, 2012)

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Refereed research papers

1. V. Antoni, R. Cavazzana, L. Fattorini, E. Martines, G. Serianni, M. Spolaore, L. Tramontin, and N. Vianello (2000). Effects of pulsed poloidal current drive on the edge region of a reversed field pinch plasma. *Plasma Physics and Controlled Fusion* **42**(8), 893–904.
2. V. Antoni, E. Martines, D. Desideri, L. Fattorini, G. Serianni, M. Spolaore, L. Tramontin, and N. Vianello (2000). Electrostatic transport reduction induced by flow shear modification in a reversed field pinch plasma. *Plasma Physics and Controlled Fusion* **42**(2), 83–90.
3. 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 (2001). Transport processes in reversed-field-pinch plasmas: Inconsistency with the self-organized-criticality paradigm. *Phys. Rev. Lett.* **87**(4), 045001.
4. V. Antoni, V. Carbone, E. Martines, G. Regnoli, G. Serianni, N. Vianello, and P. Veltri (2001). Electrostatic turbulence intermittency and MHD relaxation phenomena in a RFP plasma. *Europhys Lett* **54**(1), 51–57.

5. 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 (2001). Transport mechanisms and enhanced confinement studies in RFX. *Nucl. Fusion* **41**(4), 431–436.
6. E. Martines, M. Spolaore, V. Antoni, G. Regnoli, N. Vianello, R. Cavazzana, G. Serianni, and L. Tramontin (2001). E x B velocity shear and intermittent structures in RFX. *Czechoslovak Journal Of Physics* **51**(10), 983–993.
7. G. Serianni, V. Antoni, H. Bergsåker, P. R. Brunsell, J. Drake, M. Spolaore, H. Satherblom, and N. Vianello (2001). Electrostatic fluxes and plasma rotation in the edge region of EXTRAP-T2R. *Czechoslovak Journal Of Physics* **51**(10), 1119–1127.
8. E. Spada, V. Carbone, R. Cavazzana, L. Fattorini, G. Regnoli, N. Vianello, V. Antoni, E. Martines, G. Serianni, M. Spolaore, and L. Tramontin (2001). Search of self-organized criticality processes in magnetically confined plasmas: Hints from the reversed field pinch configuration. *Phys. Rev. Lett.* **86**(14), 3032–3035.
9. M. Spolaore, V. Antoni, M. Bagatin, D. Desideri, L. Fattorini, E. Martines, G. Serianni, L. Tramontin, and N. Vianello (2001). Study of edge plasma properties comparing operation in hydrogen and helium in RFX. *Journal of Nuclear Materials* **290-293**, 729–732.
10. 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 (2002). To what extent can dynamical models describe statistical features of turbulent flows? *Europhys Lett* **58**(3), 349–355.
11. E. Martines, V. Antoni, R. Cavazzana, G. Regnoli, G. Serianni, M. Spolaore, N. Vianello, M. Hron, and J. Stockel (2002). Coherent structures in the plasma edge turbulence of the RFX and CASTOR experiments. *Czechoslovak Journal Of Physics* **52**, 13–24.
12. 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 (2002). New insights into MHD dynamics of magnetically confined plasmas from experiments in RFX. *Nucl. Fusion* **42**(3), 247–257.
13. M. Spolaore, V. Antoni, R. Cavazzana, G. Regnoli, G. Serianni, E. Spada, N. Vianello, H. Bergsåker, and J. Drake (2002). Effects of ExB velocity shear on electrostatic structures. *Phys. Plasmas* **9**(10), 4110–4113.
14. L. Tramontin, L. Garzotti, V. Antoni, L. Carraro, D. Desideri, P. Innocente, E. Martines, G. Serianni, M. Spolaore, and N. Vianello (2002). Particle balance during edge biasing experiments in the reversed field pinch RFX. *Plasma Physics and Controlled Fusion* **44**(2), 195–204.
15. N. Vianello, M. Spolaore, G. Serianni, H. Bergsåker, V. Antoni, and J. Drake (2002). Properties of the edge plasma in the rebuilt Extrap-T2R reversed field pinch experiment. *Plasma Physics and Controlled Fusion* **44**(12), 2513–2523.
16. V. Antoni, M. Bagatin, G. Serianni, N. Vianello, M. Zuin, F. Paganucci, P. Rossetti, and M. Andrenucci (2003). Plasma Fluctuations in an Applied Field MPD Thruster. *AIP Conf. Proc.* **669**(1), 302–305.
17. V. Antoni, H. Bergsåker, G. Serianni, M. Spolaore, N. Vianello, R. Cavazzana, G. Regnoli, E. Spada, E. Martines, M. Bagatin, and J. Drake (2003). Anomalous particle transport and flow shear in the edge region of RFP's. *Journal of Nuclear Materials* **313-316 IS** -, 972–975.
18. V. Antoni, G. Regnoli, M. Spolaore, G. Serianni, N. Vianello, R. Cavazzana, E. Spada, and E. Martines (2003). Transport Due to Intermittent Events and Plasma Flow Shear in Magnetized Plasmas. *AIP Conf. Proc.* **669**(1), 191–194.
19. M. Puiatti, S. Cappello, R. Lorenzini, S. Martini, S. Ortolani, R. Paccagnella, F. Sattin, D. Terranova, T. Bolzonella, A. Buffa, A. Canton, L. Carraro, D. F. Escande, L. Garzotti, P. Innocente, L. Marrelli, E. Martines, P. Scarin, G. Spizzo, M. Valisa, P. Zanca, V. Antoni, L. Apolloni, M. Bagatin, W. Baker, O. Barana, D. Bettella, P. Bettini, R. Cavazzana, M. Cavinato, G. Chitarin, A. Cravotta, F. D'Angelo, S. D. Bello, A. D. Lorenzi, D. Desideri, P. Fiorentin, P. Franz, L. Frassinetti, E. Gaio, L. Giudicotti, F. Gnesotto, L. Grando, S. Guo, A. Luchetta, G. Malesani, G. Manduchi, G. Marchiori, D. Marcuzzi, P. Martin, A. Masiello, F. Milani, M. Moresco, A. Murari, P. Nielsen, R. Pasqualotto, B. Pegourie,

S. Peruzzo, R. Piovan, P. Piovesan, N. Pomaro, G. Preti, G. Regnoli, G. Rostagni, G. Serianni, P. Sonato, E. Spada, M. Spolaore, C. Taliercio, G. Telesca, V. Toigo, N. Vianello, P. Zaccaria, B. Zaniol, L. Zanotto, E. Zilli, G. Zollino, and M. Zuin (2003). Analysis and modelling of the magnetic and plasma profiles during PPCD experiments in RFX. *Nucl. Fusion* **43**(10), 1057–1065.

20. V. Antoni, H. Bergsåker, R. Cavazzana, V. Carbone, J. Drake, E. Martines, G. Regnoli, G. Serianni, E. Spada, M. Spolaore, and N. Vianello (2004). Turbulence and Anomalous Transport in Magnetized Plasmas: Hints from the Reversed Field Pinch Configuration. *Contrib. Plasma Phys.* **44**(56), 458–464.
21. F. Sattin, N. Vianello, and M. Valisa (2004). On the probability distribution function of particle density at the edge of fusion devices. *Phys. Plasmas* **11**(11), 5032.
22. M. Spolaore, V. Antoni, E. Spada, H. Bergsåker, R. Cavazzana, J. Drake, E. Martines, G. Regnoli, G. Serianni, and N. Vianello (2004). Vortex-induced diffusivity in reversed field pinch plasmas. *Phys. Rev. Lett.* **93**(21), 215003.
23. V. Antoni, E. Spada, N. Vianello, M. Spolaore, R. Cavazzana, G. Serianni, and E. Martines (2005). Shear flows generated by plasma turbulence and their influence on transport. *Plasma Physics and Controlled Fusion* **47**(12B), B13–B23.
24. G. Regnoli, H. Bergsåker, E. Tennfors, F. Zonca, E. Martines, G. Serianni, M. Spolaore, N. Vianello, M. Cecconello, V. Antoni, R. Cavazzana, and J.-A. Malmberg (2005). Observations of toroidicity-induced Alfvén eigenmodes in a reversed field pinch plasma. *Phys. Plasmas* **12**(4), 042502.
25. F. Sattin and N. Vianello (2005). Statistical model for intermittent plasma edge turbulence. *Phys. Rev. E* **72**(1), 5.
26. F. Sattin, N. Vianello, M. Valisa, V. Antoni, and G. Serianni (2005). On the probability distribution function of particle density and flux at the edge of fusion devices. *J. Phys.: Conf. Ser.* **7**, 247–252.
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1. N. Vianello (2011). *Notes on energetic ions and beam plasma interaction*. Task deliverable T6.2/D12.1-Beam Plasma Interaction. Grant F4E-2009-GRT-032 (PMS-H.CD)-Components and infrastructure of PRIMA.

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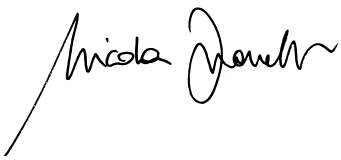
I hereby declare that the above information are true and correct to the best of my knowledge and belief and in the event of any information being found false or incorrect, my candidature will be liable to be canceled.



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Padova, Monday 30th April, 2012