

## Personal information

Name	Nicola Vianello
Date and Place of birth	14 August 1975, Venice, Italy
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Publons	<a href="#">Publons profile</a>

## Motivation

I'm a physicist with 25 years experience on plasma physics, with primary focus on fusion science, but with a broad range of interests from solar to atomic physics and low temperature plasmas. As a Deputy Task Force leader of the largest Work Package of EUROfusion Fusion Science department, I've proven capabilities of managing large international scientific program, which span from high-level objectives and priority definition, to public and private stake-holders interactions up to day-to-day operational decision. The present historical period, with revamped interest on plasma and fusion science in particular, represents a unique opportunity to take advantage of the large spectrum of expertise existing in within the Institute of Plasma Science and Technology (ISTP). An inclusive approach, with a synergical and coordinated interaction of the different spirits constituting this research institute, could foster and strengthen the role that the ISTP will play in future national and international endeavors. Large research infrastructures which will come into operation in the near future as RFX-mod2 or DTT, as well as participation to international fusion and non fusion programs represent the natural framework where ISTP can play a leading role, attracting both public and private investments, and where each of the peculiarities constituting the institute can find the proper allocation and scientific relevance. I believe that the strength of my scientific background as well as my experience in designing and managing large international scientific program can provide me with the capabilities for a challenging position as being the director of the ISTP.

## Employment

1999	<i>Consorzio RFX, Padova, Italy, Research Fellow</i>
2002-2003	<i>Consorzio RFX, Padova, Italy, Research Fellow</i>
2003-2009	<i>Consorzio RFX, Padova, Italy, Research Scientist</i>
2009-2015	<i>Institute of Ionized Gas, National Research Council (CNR), Research permanent staff (Ricercatore III Livello)</i>
2015-2016	<i>Swiss Plasma Center, Ecole Polytechnique Federale de Lausanne, Collaborator Scientifique, (unpaid leave from the National Research Council)</i>
2016-2022	<i>Institute of Plasma Science and Technology, National Research Council (CNR) and Consorzio RFX, Research permanent staff (Ricercatore III Livello)</i>
2023-date	<i>Institute of Plasma Science and Technology, National Research Council (CNR) and Consorzio RFX, Senior Researcher (Ricercatore I Livello)</i>

## Education

1993	<b>High School Leaving Certificate</b> , Liceo Scientifico Statale <i>U.Morin</i> , Venice Italy. Grade: <b>56/60</b>
1999	<b>M. Sci. Physics</b> , <i>Università degli Studi di Padova</i> . Grade: <b>110/110 cum Laude</b>
Thesis Title	<i>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)</i>
advisor	Prof. S. Lo Russo, Dr. V. Antoni
2002	<b>PhD in Energetics</b> , <i>Università degli Studi di Padova</i>
Thesis Title	<i>Self-organization phenomena and coherent structure generation</i>
advisor	Prof. A.Buffa, Dr. V. Antoni

## Summary

I've been involved in fusion plasma science since my M.Sci. in Physics in 1999. The ultimate goal of my research path is focused on the use of thermonuclear fusion as an energy alternative with high energy density, low environmental impact, and potentially unlimited supply. To accelerate the understanding of confinement in magnetic toroidal systems, I have focused on the mechanisms that regulate particle and energy transport, combining rigorous analysis of experimental data with the most advanced techniques and theoretical interpretation supported by numerical modeling. The physics of plasma of thermonuclear interest is inherently a multidisciplinary study. Consequently over the past 25 years I have developed scientific and technical skills in various areas such as plasma transport mechanism and plasma turbulence, Scrape-Off-Layer (SOL) and divertor physics, dynamical and chaotic systems, advanced statistical analysis, atomic and molecular physics, high-performance computing, plasma-material interactions, the mechanical design of diagnostics, power and control electronics, data acquisition and processing methods. All these competences have been applied not only to fusion relevant plasmas on different magnetic configurations (Reversed Field Pinches, Tokamaks, and Stellarators) but as well extending my interest towards solar physics due to the strong similarities between turbulence in laboratory and astrophysical plasmas.

Particular emphasis has been given to integrated fusion plasma scenarios, aiming to mimic conditions similar to those of a reactor (in terms of plasma performance, electron density, and use of radiating impurities) to support the design and definition of the operating point of next step devices.

During my M.sci thesis, I conducted experiments to improve the performance of a plasma confined in a Reversed Field Pinch configuration by applying a polarized electrode and modifying the electric field in the outer region of the experiment. These initial activities, published in [\[A158\]](#) allowed me to acquire skills in advanced data analysis methods for small-scale plasma fluctuations and edge diagnostics, including Langmuir probes.

During my PhD research, I further expanded these skills through periods spent in other European laboratories, particularly at the Alfvén Laboratory, KTH, Stockholm. I was responsible for the design, installation and scientific exploitation of various diagnostics, including a probe combining electrostatic and magnetic measurements to extend the analysis of turbulence to the electromagnetic component. This experience expanded my scientific knowledge of anomalous transport phenomena occurring at the edge of RFPs, as well technical expertise in areas such as ultra-high vacuum compatible materials, signal transmission, vacuum technologies, data acquisition and management.

During the same period, I also started a fruitful collaboration with experts in solar wind plasma: this collaboration allowed me to broaden my experience in nonlinear dynamics (including self-organized criticality systems) and analysis of multifractal systems and advanced techniques (wavelets, POD, etc.). I played a significant role in the development of these techniques for thermonuclear plasma, establishing the intermittent nature of thermonuclear plasma fluctuations [\[A149, A144, A132, A138, A139\]](#), their relationship with macroscopic MHD phenomena [\[A151\]](#), and the inapplicability of SOC dynamic models [\[A150, A155\]](#).

Afterwards, my interest then shifted towards the investigation of multi-scale interaction mechanisms, particularly towards the spontaneous generation of momentum in plasma induced by electromagnetic turbulence. This topic is crucial in fusion relevant plasmas, due to the role played by plasma flow in stabilizing instabilities, especially considering that future reactors will not have active methods of momentum injection. I unequivocally demonstrated the role of the Reynolds stress mechanism in momentum generation in an RFP plasma as published in *Physical Review Letters* and other journals [\[A136, A135, A130\]](#) and presented at various conferences and workshops [\[C17, C16, C18, C19, C20, C14\]](#) with a significant impact on the scientific community.

With the development of a new diagnostic, I further focused my scientific interest on the electromagnetic nature of plasma instabilities. For the first time I directly measured the current associated with turbulent plasma filaments [\[A116\]](#) and identified the coupling of drift-Alfvén mechanisms as the origin of these fluctuations [\[A101\]](#). These discoveries have been the subject of invited talks and a series of publications, highlighting the universality of this non-linear coupling with strong similarities with similar observations in magnetospheric studies [\[A110\]](#).

Concerning the relevance of laboratory plasma for the understanding of astrophysical relevant plasma phenomena, I recently expanded to include collaborations in the study of astrophysical plasma through my participation in a

bilateral collaboration agreement with the Mullard Space Science Laboratory, UCL London, responsible for some of diagnostic diagnostics in the Solar Orbiter mission.

The resonance of the results and methodology regarding the determination of current filaments has led to collaborations at the European level, with the installation of conceptually similar diagnostics in other experiments such as the TJ-II stellarator (ES) [A65], the Torpex machine (CH) [A83, A74, A84], the ASDEX-Upgrade tokamak (DE) [A94, A88], COMPASS-U [A52, A44], and the W7X stellarator [A36, A33]. In these collaborations, I have contributed to the design, installation, and scientific exploitation of mentioned diagnostics in all experiments. In particular, I have published the first measurement of the current perturbation associated with Edge Localized Modes (modes that occur in improved confinement regimes and potentially dangerous for first wall materials) [A94] as well as contributed to the publication providing clear experimental evidence validating an analytical model of current perturbation associated with blobs in conditions similar to those in the Scrape Off Layer region of a tokamak [A83]. In addition to the work performed in the framework of these international collaborations, I have actively contributed to the study of Reversed Field Pinch configurations through my participation in the RFX-mod project. I am a co-author of the paper on the discovery of low-dissipation helical regimes with improved confinement [A108], published in Nature Physics. My primary research interest on this respect has been the analysis of the effects of three-dimensional magnetic perturbations on edge plasmas [A79, A78, A82, A67], including transport [A62, A66], plasma-wall interaction [A71, A73], plasma velocity modification, and observed turbulence [A68, A72]. The importance of these contributions is evident from invited talks at specialized workshops and invited participation in the European Physical Society Conference on Plasma Physics, as well as the number of publications for which I am an author or co-author. I have also co-supervised a PhD thesis dedicated to this topic.

Since 2014, my activity concentrated on the study of transport properties in the outer region of tokamak plasmas. Such an activity implied the participation to the experimental activity in several European devices, through my involvement in various Work Packages of the EUROfusion Consortium. The EUROfusion Consortium coordinates European fusion activities and participates in experimental exploitation of the major national experiments. I have been the Scientific Coordinator continuously since 2014 for several experiments conducted at ASDEX-Upgrade, TCV, and JET, the world's largest fusion experiment. I focused my scientific effort on the analysis transport phenomena in the Scrape Off Layer region under conditions similar to those expected for future reactors as well as on the investigation of alternative regimes without ELMs, such as the M-mode observed for the first time at JET [A49, A26]. This research strongly contributed to the understanding of the relationship between the Scrape Off Layer and the Divertor region, where most of the exhausted power is deposited once it leaves the confined region. It is worth remembering that integrated scenarios, combining confinement properties with effective power management strategies are currently among the most urgent challenges in fusion research. During this period, thanks to the scientific recognition, I was invited to spend 1 year at the Swiss Plasma Center, Ecole Polytechnique Federale de Lausanne, as a Scientific Collaborator.

The experiments I've coordinated between 2014 and 2020 contributed to significant improvements on the understanding of the transport occurring in the peripheral region of the plasma, in particular concerning the modification during high-density plasma operations [A3, A16, A59, A55, A27, A41, A17], the modification caused by different divertor recycling conditions [A8, A15, A35, A47], or by different divertor topological geometries [A55, A53]. These studies have advanced our integrated understanding, highlighting the key role played by collisionality at the magnetic separatrix [A3, B3, A16, B11] and neutral density in the divertor or midplane region [A28, A27]. The relevance of this work is evidenced by the number of publications for which I am the first author or co-author as the experiment coordinator.

The role of Scientific Coordinator implied the establishment of experimental/analysis/modeling strategy to achieve specific scientific deliverables, the careful planning of the experimental sessions in tight collaboration with the device operational and diagnostic teams, the organization of large international teams for the best usage of peculiar expertise in a synergistic approach. The management of a budget of approximately 2.5 M€ for dedicated machine time and approximately 5 FTE (full-time equivalent) of coordinated scientific personnel can be quantified as a minimum. My research work has also involved managing a research group and supervising doctoral students whose research topics were designed to broaden my scientific horizons in numerical modeling [A2, A21] and integrated analysis of kinetic, fluctuation, and calorimetric diagnostics [A9, A10]. The recognition of this work is evident from my election (through peer reviewed selection) as a European member of the International Tokamak Physics Activity (ITPA) Pedestal and Edge (PEP) group, as well as my active participation as a task coordinator in the ITPA Divertor and SOL group.

From November 2020, following a highly competitive selection, I've been chosen as the Deputy Task Force Leader of the EUROfusion Tokamak Exploitation Work Package (WPTE). WPTE is the largest work package of the EUROfusion Department of Fusion Science and is in charge of developing the experimental program on different tokamak devices, namely JET (UK), MAST-U (UK), ASDEX-Upgrade (AUG), TCV (CH), and WEST (FR). WPTE aims to develop an experimental and modeling/interpretation program to determine plasma operational scenarios for a future reactor, including the management of rapid and disruptive transients, active control mechanisms to determine confinement conditions in real-time, and the dynamics of superthermal particles. This program also integrates efficient power exhaust management solutions, such as scenarios with radiating impurities or magnetic geometries favorable for heat load dissipation, as well as studying the impact of such scenarios on plasma-facing materials. As

a Task Force Leader (TFL) I have defined the large scale experimental program, organized it into several Research Topics determining specific scientific objectives, allocated experimental time based on scientific priorities in different devices, selected Scientific Coordinators proposed by national associations, allocated human resources to form the best scientific team to achieve the scientific objectives, and monitored their activities. I'm in charge as well of establishing and prioritizing international collaborations with non-European members, ensuring the possibility to increase European scientific expertise and promoting European science to the worldwide fusion community. On top of high level scientific programming, the Deputy TFL role include as well day-to-day management, including rapid programmatic responses to changes in machine operating conditions. The overall total allocation of WPTE is approximately 100 M€ in 5 years, to be spent for device exploitation, human resources and travel costs to facilitate integration among personnel from different European laboratories. The program I contributed to develop is fully embedded into the EUROfusion Consortium program, and it is the responsibility of the TFLs to identify and monitor the Deliverables and Milestones that are integral parts of the grant agreement between EUROfusion and the European Commission. Consequently throughout my career I've demonstrated a strong and robust scientific multidisciplinary background, a vital tendency to develop scientific network, a proved capability to construct, coordinate and monitor large pan-European scientific program while interacting with various European and national stakeholders. The undeniable role of responsibility clearly places me at the center of international fusion research, and this would allow me to promote the Italian contribution to the field. All these expertise qualifies my proposal for the role of Director of the Institute of Plasma Science and Technology of the CNR.

## Duties and Responsibilities

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- 2007-2015 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 and the development of new probe heads with 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 modelling 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 experiment *B13-19 Investigation of M-Mode* on JET Tokamak campaigns C31-C34. Coordination implies 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. The scientific results have been published in [A49, A26]
- 2014 Scientific Coordinator of experiment *AUG14-2.2-3, SOL filamentary transport at high density*, under the MST1 Eurofusion Work-Packages. Coordination implied the development of the experimental strategy, the assignment and monitoring of the activities of the international experimental team, the design of execution of the detailed experimental plan in collaboration with Session leaders and diagnosticians, the establishment of the scientific objectives and their proper dissemination in appropriate publications in scientific journals and conferences. A gross estimate of 220 k€, including machine time and human resources can be estimated. The scientific results contributed to the following publications [A40, A59, A41]
- 2015-2016 Responsible Scientist Soft X ray diagnostic in the TCV tokamak. Deputy Responsible Scientist for the Neutral Beam Heating system in the TCV tokamak.
- 2015-2016 Scientific Coordinator of experiment *TCV15-2.2-3: Filamentary Transport in the SOL* under MST1 Eurofusion Work-Package. Coordination implied the development of the experimental strategy, the assignment and monitoring of the activities of the international experimental team, the design of execution of the detailed experimental plan in collaboration with Session leaders and diagnosticians, the establishment of the scientific objectives and their proper dissemination in appropriate publications in scientific journals and conferences. A gross estimate of 135 k€, including machine time and human resources can be estimated. The scientific results contributed to the following publications [A55]
- 2015-2016 Scientific Coordinator of experiment *TCV15-1.5-1, Mitigation of high Z impurity accumulation through combined central ECRH and tailoring of MHD activity in high performance H-modes* under MST1 Eurofusion Work-Package. Coordination implied the development of the experimental strategy, the assignment and monitoring of the activities of the international experimental team, the design of execution of the detailed experimental plan in collaboration with Session leaders and diagnosticians, the establishment of the scientific objectives and their proper dissemination in appropriate publications in scientific journals and conferences. A gross estimate of 93 k€, including machine time and human resources can be estimated.
- 2017-2018 Scientific Coordinator of Topic 21 *Filamentary transport in high-power H-mode conditions and in no/small-ELM regimes to predict heat and particle loads on PFCs for future devices* under MST1 Eurofusion Work-Package. Coordination implied the development of the experimental strategy across three European Tokamak Devices (Asdex-Upgrade (Germany), TCV (Switzerland), MAST-U (UK)), the assignment and monitoring of the activities of the international experimental team, the design of execution of the detailed experimental plan in collaboration with Session leaders and diagnosticians, the establishment of the scientific objectives and their proper dissemination in appropriate publications in scientific journals and conferences. A gross estimate of 840 k€, including machine time and human resources can be estimated. The scientific results contributed to the following publications [A28, A27]
- 2018-2019 Scientific Coordinator of JET Task T18-02 *Scrape-off layer and SOL- pedestal interaction* under JET1 Eurofusion Work-Package. Coordination implies assigning activities to the international experimental team, plan data analysis campaign and interface with Scientific Coordinators of different experiments. The overall human resources coordinate can be estimated in 374 ppds (person per day) in 2018 and 503 ppds in 2019. The scientific results contributed among the others to the following publications [A23, A19]



- 2019-2020 Scientific Coordinator of JET Experiment M18-41 *Divertor geometry effect on detachment and SOL* under JET1 Eurofusion Work-Package. Coordination implied the development of the experimental strategy, the assignment and monitoring of the activities of the international experimental team, the design of execution of the detailed experimental plan in collaboration with Session leaders and diagnosticians, the establishment of the scientific objectives and their proper dissemination in appropriate publications in scientific journals and conferences. A gross estimate of 600 ppds (person per day) have been coordinated for a total of 8 experimental sessions on JET including exploitation during the Tritium campaign. The scientific results contributed to the following publications [A8, A15], to an invited keynote presentation at the American Physical Society, Division of Plasma Physics Conference [B6] and to the contribution to IAEA Fusion Energy Conference [B11]
- 2019-2020 Scientific Coordinator of Topic 16 *Effect of filamentary transport on heat and particle loads* under MST1 Eurofusion Work-Package. experimental strategy across different European Tokamak Devices (Asdex-Upgrade (Germany), TCV (Switzerland)), the assignment and monitoring of the activities of the international experimental team, the design of execution of the detailed experimental plan in collaboration with Session leaders and diagnosticians, the establishment of the scientific objectives and their proper dissemination in appropriate publications in scientific journals and conferences. A gross estimate of 800 k€, including machine time and human resources can be estimated. The scientific results contributed to the following publications [A16, A17]
- 2020-Date Elected European Member of the ITPA Pedestal & Edge Physics Topical Group
- 2020-Date Responsible of ITPA Div-SOL task D34 to coordinate activity on *Far Scrape Off Layer transport* in a world-wide coordinated effort
- 2020-Date Member of the EUROfusion HPC (High Performance Computing) Allocation Committee.
- 2020-Date Deputy Task Force Leader of Work Package *Tokamak Exploitation (WPTE)* of the EUROfusion Consortium. The work package WPTE, is the larger Work Package within the Fusion Science Department of the EUROfusion Consortium, and has been established to coordinate the European experimental fusion program in support of the ITER project and the design activity of the DEMO program. The activity of the Work Package is distributed across 5 different European tokamak devices, ASDEX-Upgrade (Germany), TCV (Switzerland), MAST-U (UK), WEST (France) and JET (UK). Among the duties of the Task Force Leaders are the definition of the high-level scientific deliverables, the implementation of the program subdivided into different Research Topics, the attribution of appropriate experimental time as well as human resources for the achievement of scientific results by proper managing the available budget (approximately 19 M€/ year) the monitoring of the achievements and dissemination of the scientific results.
- 2022-Date Member of the Expert Group on *SOL and Divertor Physics* for the definition of the DTT Experiment Research Plan

## Competition and Habilitation

- May 2009 Public selection (Ref.364/12) held by Consiglio Nazionale delle Ricerche, for research position
- Evaluation panel Prof. A. Fasoli, Ecole Polytechnique Federale de Lausanne, Switzerland  
Dr. V. Antoni, Consiglio Nazionale delle Ricerche, Istituto Gas Ionizzati, Padova  
Dr. D. Farina, Consiglio Nazionale delle Ricerche, Istituto di Fisica del Plasma, Milano
- Result The competition included written exams and oral colloquium. The candidate resulted the winner of the competition with a final mark of 104.5/120
- 2012 Abilitazione Scientifica Nazionale, Bando D.D. 222/2012, (ASN National Scientific Habilitation). Public evaluation of the competences and scientific achievements to obtain the qualification of *Professore Associato* (Associate Professor) in Experimental Physics and Material Science

Evaluation Panel	<p>Prof. Mattera Lorenzo, Università degli Studi di Genova, Italy</p> <p>Prof. Rinaldo Cubeddu, Politecnico di Milano, Italy</p> <p>Prof. Stefano Nannarone, Università degli Studi di Modena e Reggio Emilia, Italy</p> <p>Prof. Mobilio Settimio, Università degli Studi di Roma Tre, Italy</p> <p>Prof. Andrea Cavalleri, Max Planck Institute for the Structure and Dynamics of Matter, Hamburg</p>
Grade	<p>Excellent</p> <p>Valid from 11/12/2013 to 11/12/2019</p>
2018	<p>Abilitazione Scientifica Nazionale, Bando D.D. 1532/2016, (ASN National Scientific Habilitation). Public evaluation of the competences and scientific achievements to obtain the qualification of <i>Professore Ordinario</i> (Full Professor) in Experimental Physics and Material Science</p>
Evaluation Panel	<p>Prof. Federico Boscherini, Università degli Studi di Bologna</p> <p>Prof. Giulio Nicola Cerullo, Politecnico di Milano</p> <p>Prof.ssa Pasqualino Maria Maddalena, Università degli Studi di Napoli</p> <p>Prof. Francesco Saverio Pavone, Università degli Studi di Firenze</p> <p>Prof. Sandro Santucci, Università degli Studi dell'Aquila</p> <p>Valid from 26/07/2018 to 26/07/2029</p>
2018	<p>Abilitazione Scientifica Nazionale, Bando D.D. 1532/2016, (ASN National Scientific Habilitation). Public evaluation of the competences and scientific achievements to obtain the qualification of <i>Professore Associato</i> (Associate Professor) in Experimental Physics and Material Science</p>
Evaluation Panel	<p>Prof. Federico Boscherini, Università degli Studi di Bologna</p> <p>Prof. Giulio Nicola Cerullo, Politecnico di Milano</p> <p>Prof. Pasqualino Maria Maddalena, Università degli Studi di Napoli</p> <p>Prof. Francesco Saverio Pavone, Università degli Studi di Firenze</p> <p>Prof. Sandro Santucci, Università degli Studi dell'Aquila</p> <p>Valid from 26/07/2018 to 26/07/2029</p>
2018	<p>Abilitazione Scientifica Nazionale, Bando D.D. 1532/2016 (ASN National Scientific Habilitation). Public evaluation of the competences and scientific achievements to obtain the qualification of <i>Professore Associato</i> (Associate Professor) in Theoretical Physics of Matter</p>
Evaluation Panel	<p>Prof. Federico Boscherini, Università degli Studi di Bologna</p> <p>Prof.ssa Vincenza Cupri, Università degli Studi di Messina</p> <p>Prof. Amos Maritan, Università degli Studi di Padova</p> <p>Prof. Alessandro Tredicucci, Università degli Studi di Pisa</p> <p>Prof. Pierluigi Veltri, Università della Calabria</p> <p>Abilitazione valida dal 08/08/2018 al 08/08/2029</p>
2020	<p>Consiglio Nazionale delle Ricerche (National Research Council) Procedure N. 315.15 PR for the promotion to the level of <i>Senior Researcher</i> (Ricercatore I Livello)</p>
Evaluation Panel	<p>Prof. Stefano Zapperi, Università degli Studi di Milano</p> <p>Dott. Michael Pusch, Istituto di biofisica (IBF)-CNR, Genova</p> <p>Dott.ssa Paola Mantica, Istituto per la scienza e tecnologia dei plasmi (ISTP)-CNR, Milano</p> <p>The candidate has been evaluated as eligible and promoted to the level of Senior Researcher from 01/01/2023</p>

## International Experience

March – June 2001	Visiting scientist at Royal Institute of Technology, Stockholm, Sweden
May – June 2002	Visiting scientist, under EURATOM-Mobility Staff Movement, at Royal Institute of Technology, Stockholm, Sweden
March – April 2003	Visiting scientist, under EURATOM-Mobility Staff Movement, at Royal Institute of Technology, Stockholm, Sweden
April – June 2004	Visiting scientist, under EURATOM-Mobility Staff Movement, at Royal Institute of Technology, Stockholm, Sweden

October 2005	Visiting scientist, under EURATOM-Mobility Staff Movement, at Risø National Laboratory, Denmark
February 2008	Visiting Scientist, under EURATOM-Mobility Staff Movement, at Max-Planck Institut für Plasmaphysik, Garching, Germany
May 2009	Visiting Scientist, under EURATOM-Mobility Staff Movement, at Max-Planck Institut für Plasmaphysik, Garching, Germany
November 2009	Visiting Scientist, under EURATOM-Mobility Staff Movement, at Centre der Recherches en Physique des Plasmas, EPFL, Lausanne
March 2011	Visiting scientist, under EURATOM-Mobility Staff Movement, at Royal Institute of Technology, Stockholm, Sweden
April 2011	Visiting scientist, under EURATOM-Mobility Staff Movement, at the National Fusion Laboratory, CIEMAT, Madrid
May 2011	Visiting Scientist, under EURATOM-Mobility Staff Movement, at Max-Planck Institut für Plasmaphysik, Garching, Germany
February-March 2012	Visiting Scientist, under EURATOM-Mobility Staff Movement, at Culham Centre for Fusion Energy, Oxford, JET
July-September 2013	Visiting Scientist, under EURATOM-Mobility Staff Movement, at Culham Centre for Fusion Energy, Oxford, JET
May 2014	Visiting Scientist at Max-Planck Institut für Plasmaphysik, Garching, Germany
July 2014	Visiting Scientist at Culham Centre for Fusion Energy, Oxford, JET
July 2015	Visiting Scientist at Max-Planck Institut für Plasmaphysik, Garching, Germany
July 2015	Visiting Scientist at Max-Planck Institut für Plasmaphysik, Garching, Germany
October 2015	Visiting Scientist at Max-Planck Institut für Plasmaphysik, Garching, Germany
February 2016	Visiting Scientist at Max-Planck Institut für Plasmaphysik, Garching, Germany
May 2016	Visiting Scientist at Swiss Plasma Centre, EPFL, Lausanne
July 2016	Visiting Scientist at Swiss Plasma Centre, EPFL, Lausanne
April 2017	Visiting scientist (fellowship), within EUROfusion framework, at Max-Planck Institut für Plasmaphysik, Garching, Germany
May 2017	Visiting scientist (fellowship), within EUROfusion framework, at Max-Planck Institut für Plasmaphysik, Garching, Germany
June 2017	Visiting scientist (fellowship), within EUROfusion framework, at Swiss Plasma Centre, EPFL, Lausanne
September 2017	Visiting scientist (fellowship), within EUROfusion framework, at the Swiss Plasma Centre, EPFL, Lausanne
November 2017	Visiting scientist (fellowship), within EUROfusion framework, at the Swiss Plasma Centre, EPFL, Lausanne
July 2018	Visiting scientist (fellowship), within EUROfusion framework, at Culham Centre for Fusion Energy, Oxford, UK
2019-date	Several visits to different European Laboratories, mainly Swiss Plasma Center at EPFL, Culham Centre for Fusion Energy at Culham, UK and Max-Planck Institut für Plasmaphysik, Garching all within EUROfusion framework scheme

## Invited Lectures

July 2012	Invited lecture at the <i>Workshop on Electric Field, Turbulence Self Organization in Magnetized Plasmas</i> , Stockholm, Sweden
Title	<i>The role of 3D fields on edge and SOL turbulence</i>
July 2014	Invited lecture at the <i>41<sup>st</sup> EPS Conference in Plasma Physics</i> , Berlin, Germany



Title	<i>Magnetic perturbation as a viable tool for edge turbulence modification</i>
December 2014	Invited lecture at the <i>1st International and Interdisciplinary Workshop on Fusion and Technological Plasmas (FUSTECH)</i> , Collaborative Research Center SFB-TR87, Ruhr-University Bochum
Title	<i>Fluctuations in tokamaks and RFPs: Relation with topology</i>

## Teaching

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2008–2009	Assistant for the course <i>Fluid and Plasma Physics</i> , M.Sci degree in Physics, Department of Physics, University of Padova
2010	Assistant for the course <i>Fluid and Plasma Physics</i> , M.Sci degree in Physics, Department of Physics, University of Padova
2011–2012	Assistant to the course <i>Fundamental of Plasma Physics</i> , Bachelor degree in Physics, Department of Physics, University of Padova
2012–2013	Assistant to the course <i>Fundamental of Plasma Physics</i> , Bachelor degree in Physics, Department of Physics, University of Padova
2013–2014	Assistant to the course <i>Fundamental of Plasma Physics</i> , Bachelor degree in Physics, Department of Physics, University of Padova
2013–2014	Lecturer for basic Physics course of the Joint Research Doctorate and European Interuniversity Doctoral Network on Fusion Science and Engineering
2014–2015	Assistant to the course <i>Fundamental of Plasma Physics</i> , Department of Physics, University of Padova
2021	Lecturer for basic <i>Advanced Course on Plasma Physics and Diagnostic</i> per il PhD Programme in Fusion Science and Engineering, Università degli Studi di Padova ed Università degli studi di Napoli Federico II
2023	Lecturer for basic <i>Advanced Course on Plasma Physics and Diagnostic</i> per il PhD Programme in Fusion Science and Engineering, Università degli Studi di Padova ed Università degli studi di Napoli Federico II

## Supervising

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2007	Supervisor for Bachelor Thesis, Department of Physics, University of Padova, candidate: A. Scaggion
2009	Supervisor for M.Sci. Thesis, Department of Physics, University of Padova, candidate: A. Scaggion
2011	Supervisor for Bachelor Thesis, Department of Physics, University of Padova, candidate: A. Mazzi
2013	Supervisor for M.Sci. Thesis, Department of Physics, University of Padova, candidate: A. Mazzi
2015	Supervisor for PhD. Thesis, Department of Physics, University of Padova, candidate: C. Rea
2015	Supervisor for M.Sci. Thesis, Ecole Polytechnique Federale de Lausanne, candidate: M. Pedro
2020	Supervisor for M.Sci. Thesis, Department of Physics, University of Padova, candidate: S. Bresciani
2019–2022	Supervisor for PhD. Thesis in Engineering for Energy and Environment, Dipartimento di Ingegneria, Università della Tuscia, candidate: D. Mancini
2020–2023	Supervisor for PhD. Thesis in Engineering for Energy and Environment, Dipartimento di Ingegneria, Università della Tuscia, candidate: A. Redl
2020–2023	Supervisor for PhD. Thesis in Fusion Science and Engineering, Università degli Studi di Padova, candidate: A. Stagni

2022-2025 Supervisor for PhD. Thesis in Engineering for Energy and Environment, Dipartimento di Ingegneria, Università della Tuscia, candidate: Y. Nakeva

## PhD Committee

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- 2014 PhD Committee at the Department of Physics, Technical University of Denmark. Candidate: N. Yan
- 2015 PhD Committee at the Faculté de Sciences de Base, Ecole Polytechnique Federale de Lausanne. Candidate: F. Avino. Thesis N. 6734
- 2016 PhD Committee at the Faculté de Sciences de Base, Ecole Polytechnique Federale de Lausanne. Candidate: F. Nespoli. Thesis N. 7475
- 2017 PhD Committee at the Department of Physics, University of York. Candidate: A. Wynn
- 2018 PhD Committee presso la Faculté de Sciences de Base, Ecole Polytechnique Federale de Lausanne. Candidate: P. Paruta. Thesis N. 8944
- 2018 PhD Committee at the Department of Physics, Technical University of Denmark. Candidate: J. M. Bolsen
- 2020 PhD Committee at the Faculté de Sciences de Base, Ecole Polytechnique Federale de Lausanne. Candidate: C. Beadle. Thesis N. 8279
- 2021 PhD Rapporteur at the Aix-Marseille Université Candidate: R. Tatali
- 2022 PhD Rapporteur at the Aix-Marseille Université Candidate: M. Scotto d'Abusco

## Evaluation panel

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- 2013 Reviewer for grant *Futuro in Ricerca 2013*, Proposal N. RBFR13MXVQ
- 2013 Reviewer for grant *PRIN 2012*, Proposal N. 2012XAS7WZ
- 2020 Reviewer for application to the Department of Energy, Office of Fusion Energy Science, USA
- 2020 Reviewer for application to the Czech Academy of Science
- 2020 Reviewer for application to Sweden Research Council

## Research Grant participation

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- 2000-Date Participation to the RFX project and its following upgrade RFX-mod under EURATOM-ENEA framework program (2000-2014) and EUROfusion Consortium-ENEA from 2014. The overall amount of european and national funding to this program can be estimated in 250 M€with additional 18 M€financed through the Italian National Recovery Resilience Plan (NRPP). RFX-mod is listed among the high priority italian research infrastructure.
- 2009 Participation to Task EFDA WP09-TGS-02b *Physics of Rotation in plasmas*
- 2010 Participation to Task EFDA WP10-TRA-05 *Statistical properties of edge turbulent transport*. Financed contribution: 0.2 FTE (Full Time equivalent)
- 2011 Participation to Task EFDA WP11-TRA-05 *Statistical properties of edge turbulent transport: role of 3-D physics*. Financed contribution: 0.2 FTE
- 2012 Participation to Task EFDA WP12-IPH-A06 *Pedestal Instabilities (ELMs) Mitigation and Heat Loads*. Financed contribution: 0.2 FTE
- 2012 Participation to Task EFDA WP12-IPH-A08 *Physics of the Pedestal and H-Mode*. Financed contribution 0.2 FTE

- 2013 Participation to Task EFDA WP13-IPH-A04 *3D effects on plasma rotation: Comparative studies in Tokamaks and RFPs*. Financed contribution 16 k€
- 2014 Participation to Task EFDA WP14-ER-01/ENEA-RFX-06 *Investigation of edge plasma electronmagnetic filaments and associated transport: from ELMs to turbulent structures*. Financed contribution 187 k€
- 2014 Participation to Task EFDA WP14-ER-01/CCFE-03 *Understanding, predicting and utilising non-axisymmetry in tokamak plasmas*. Financed contribution 177 k€
- 2013-Date Participation to European Project *Multi-scale Electrostatic Energisation of Plasmas: Comparison of Collective Processes in Laboratory and Space* under the Joint Bilateral Agreement CNR/Royal Society

## Publications

I have authored a total number of 158 Articles in peer reviewed journal, 110 conference proceedings and personally presented 21 oral contributions.

h-index factor: 35 according to ISI Web of Knowledge (last update January 10, 2024) or 47 according to Google scholar (last update January 10, 2024)

### Article in peer-review journal

- [A1] Grover, O., Manz, P., Yashin, A., Réfy, D., Seidl, J., **Vianello, N.**, Birkenmeier, G., Solano, E., Sos, M., Bohm, P., Bilkova, P., Hron, M., Panek, R., Team, t. A. U., Team, t. C., Team, t. G.-M., and Contributors, J. (2024) *"Experimentally corroborated model of pressure relaxation limit cycle oscillations in the vicinity of the transition to high confinement in tokamaks"*, *Nuclear Fusion* **64**, 026001.
- [A2] Mancini, D., Ricci, P., **Vianello, N.**, Parys, G. V., and Oliveira, D. (2024) *"Self-consistent multi-component simulation of plasma turbulence and neutrals in detached conditions"*, *Nuclear Fusion* **64**, 016012.
- [A3] Stagni, A., **Vianello, N.**, Agostini, M., Colandrea, C., Gorno, S., Labit, B., Sheikh, U. A., Simons, L., Sun, G.-Y., Tsui, C. K.-W., Ugoletti, M., Wang, Y., Wüthrich, C. T., Boedo, J. A., Reimerdes, H., and Theiler, C. (2024) *"The effect of plasma shaping on high density H-mode SOL profiles and fluctuations in TCV"*, *Nuclear Fusion*.
- [A4] Birkenmeier, G., Solano, E. R., Carvalho, I. S., Hillesheim, J. C., Delabie, E., Lerche, E., Taylor, D., Gallart, D., Mantsinen, M. J., Silva, C., Angioni, C., Ryter, F., Carvalho, P., Fontana, M., Pawelec, E., Silburn, S. A., Sirén, P., Aleiferis, S., Bernardo, J., Boboc, A., Douai, D., Puglia, P., Jacquet, P., Litherland-Smith, E., Jepu, I., Kos, D., Sun, H. J., Shaw, A., King, D., Viola, B., Henriques, R., Kirov, K. K., Baruzzo, M., Garcia, J., Hakola, A., Huber, A., Joffrin, E., Keeling, D., Kappatou, A., Lennholm, M., Lomas, P., Luna, E. d. I., Maggi, C. F., Mailloux, J., Maslov, M., Rimini, F. G., **Vianello, N.**, Verdoolaege, G., Weisen, H., Wischmeier, M., and Contributors, J. (2023) *"The role of isotope mass and transport for H-mode access in tritium containing plasmas at JET with ITER-like wall"*, *Plasma Physics and Controlled Fusion* **65**, 054001.
- [A5] Frassinetti, L., Thun, C. P. v., Chapman-Oplopoiou, B., Nyström, H., Poradzinski, M., Hillesheim, J., Horvath, L., Maggi, C., Saarelma, S., Stagni, A., Szepesi, G., Bleasdale, A., Chomiczewska, A., Morales, R., Brix, M., Carvalho, P., Dunai, D., Field, A., Fontdecaba, J., Sun, H., King, D., Kos, D., Kowalska, E., Labit, B., Lennholm, M., Menmuir, S., Rachlew, E., Refy, D., Schneider, P., Solano, E., **Vianello, N.**, Vécsei, M., and Contributors, J. (2023) *"Effect of the isotope mass on pedestal structure, transport and stability in D, D/T and T plasmas at similar  $\beta_N$  and gas rate in JET-ILW type I ELMy H-modes"*, *Nuclear Fusion* **63**.
- [A6] Groth, M., Solokha, V., Aleiferis, S., Brezinsek, S., Brix, M., Carvalho, I., Carvalho, P., Corrigan, G., Harting, D., Horsten, N., Jepu, I., Karhunen, J., Kirov, K., Lomanowski, B., Lawson, K., Lowry, C., Meigs, A., Menmuir, S., Pawelec, E., Pereira, T., Shaw, A., Silburn, S., Thomas, B., Wiesen, S., Börner, P., Borodin, D., Jachmich, S., Reiter, D., Sergienko, G., Stancar, Z., Viola, B., Beaumont, P., Bernardo, J., Coffey, I., Conway, N., Luna, E. d. I., Douai, D., Giroud, C., Hillesheim, J., Horvath, L., Huber, A., Lomas, P., Maggi, C., Maslov, M., Thun, C. P. v., Scully, S., **Vianello, N.**, Wischmeier, M., and contributors the, t. J. (2023) *"Characterisation of divertor detachment onset in JET-ILW hydrogen, deuterium, tritium and deuterium-tritium low-confinement mode plasmas"*, *Nuclear Materials and Energy* **34**, 101345.

- [A7] Groth, M., Solokha, V., Aleiferis, S., Brezinsek, S., Brix, M., Carvalho, I., Carvalho, P., Corrigan, G., Harting, D., Horsten, N., Jepu, I., Karhunen, J., Kirov, K., Lomanowski, B., Lawson, K., Lowry, C., Meigs, A., Menmuir, S., Pawelec, E., Pereira, T., Shaw, A., Silburn, S., Thomas, B., Wiesen, S., Börner, P., Borodin, D., Jachmich, S., Reiter, D., Sergienko, G., Stancar, Z., Viola, B., Beaumont, P., Bernardo, J., Coffey, I., Conway, N., Luna, E. d. I., Douai, D., Giroud, C., Hillesheim, J., Horvath, L., Huber, A., Lomas, P., Maggi, C., Maslov, M., Thun, C. P. v., Scully, S., **Vianello, N.**, Wischmeier, M., and contributors the, t. J. (2023) “*Characterisation of divertor detachment onset in JET-ILW hydrogen, deuterium, tritium and deuterium-tritium low-confinement mode plasmas*”, *Nuclear Materials and Energy* **34**, 101345.
- [A8] Lomanowski, B., Rubino, G., Uccello, A., Dunne, M., **Vianello, N.**, Aleiferis, S., Canik, J., Carvalho, I., Corrigan, G., Frassinetti, L., Frigione, D., Garzotti, L., Groth, M., Meigs, A., Maslov, M., Thun, C. P. v., Rimini, F., Schneider, P., Sergienko, G., Simpson, J., Eester, D. V., and Contributors, J. (2023) “*Parameter dependencies of the separatrix density in low triangularity L-mode and H-mode JET-ILW plasmas*”, *Nuclear Fusion* **63**, 036019.
- [A9] Redl, A., Hohmann, T., Eich, T., **Vianello, N.**, Bernert, M., David, P., Harder, N. d., Herrmann, A., Rohde, V., Weiland, M., Team, t. A. U., and Team, t. E. M. (2023) “*The global energy balance of the ASDEX Upgrade tokamak determined with the revised cooling water calorimetry*”, *Plasma Physics and Controlled Fusion* **65**, 115003.
- [A10] Redl, A., Eich, T., **Vianello, N.**, David, P., Team, t. A. U., and Team, t. E. M. (2023) “*Energy load on first wall components in high density, small ELM regimes in ASDEX Upgrade*”, *Nuclear Materials and Energy* **34**, 101319.
- [A11] Solano, E., Birkenmeier, G., Silva, C., Delabie, E., Hillesheim, J., Baciero, A., Balboa, I., Baruzzo, M., Boboc, A., Brix, M., Bernardo, J., Bourdelle, C., Carvalho, I., Carvalho, P., Challis, C., Chernyshova, M., Chomiczewska, A., Coelho, R., Coffey, I., Craciunescu, T., Cal, E. d. I., Luna, E. d. I., Dumont, R., Dumortier, P., Fontana, M., Fontdecaba, J., Frassinetti, L., Gallart, D., Garcia, J., Giroud, C., Gromelski, W., Henriques, R., Hall, J., Ho, A., Horton, L., Horvath, L., Jacquet, P., Jepu, I., Joffrin, E., Kappatou, A., Keeling, D., King, D., Kiptily, V., Kirov, K., Kos, D., Kowalska-Strzȳciwilk, E., Lennholm, M., Lerche, E., Litherland-Smith, E., Loarte, A., Lomanowski, B., Lomas, P., Maggi, C., Mailloux, J., Mantsinen, M., Maslov, M., Meigs, A., Monakhov, I., Morales, R., Nielsen, A., Nina, D., Noble, C., Pawelec, E., Poradzinski, M., Pucella, G., Puglia, P., Réfy, D., Rasmussen, J. J., Righi, E., Rimini, F., Robinson, T., Sertoli, M., Silburn, S., Sips, G., Sirén, P., Štancar, Ž., Sun, H., Szepesi, G., Taylor, D., Tholerus, E., Thomas, B., Verdoolaege, G., Vincenzi, P., Viola, B., **Vianello, N.**, Wilson, T., and Contributors, J. (2023) “*L-H transition studies in tritium and deuterium-tritium campaigns at JET with Be wall and W divertor*”, *Nuclear Fusion* **63**.
- [A12] Sun, H., Silburn, S., Carvalho, I., King, D., Giroud, C., Fishpool, G., Matthews, G., Henriques, R., Keeling, D., Rimini, F., Garzotti, L., Frigione, D., Eester, D. V., Groth, M., Flanagan, J., Kos, D., Viola, B., Boboc, A., Shi, P., Mayoral, M.-L., Mailloux, J., Maggi, C., Huber, A., Douai, D., **Vianello, N.**, Lomas, P., Lennholm, M., Maslov, M., Kirov, K., Jacquet, P., Lowry, C., Baruzzo, M., Stuart, C., Mitchell, J., Horvath, L., McDonald, D., and Contributors, J. (2023) “*The broadening of SOL profiles in JET tritium plasma and its impact on machine operation*”, *Nuclear Fusion* **63**, 016021.
- [A13] Cordaro, L., Zanca, P., Zuin, M., Auriemma, F., Fassina, A., Martines, E., Zaniol, B., Cavazzana, R., Masi, G. D., Grenfell, G., Momo, B., Spagnolo, S., Spolaore, M., and **Vianello, N.** (2022) “*Physics of tearing mode rotation and slow-down in the RFX-mod tokamak*”, *Nuclear Fusion* **62**, 126003.
- [A14] Galassi, D., Theiler, C., Body, T., Manke, F., Micheletti, P., Omotani, J., Wiesenberger, M., Baquero-Ruiz, M., Furno, I., Giacomini, M., Laribi, E., Militello, F., Ricci, P., Stegmeir, A., Tamain, P., Bufferand, H., Ciraolo, G., Oliveira, H. D., Fasoli, A., Naulin, V., Newton, S. L., Offeddu, N., Oliveira, D. S., Serre, E., and **Vianello, N.** (2022) “*Validation of edge turbulence codes in a magnetic X-point scenario in TORPEX*”, *Physics of Plasmas* **29**, 012501.
- [A15] Lomanowski, B., Dunne, M., **Vianello, N.**, Aleiferis, S., Brix, M., Canik, J., Carvalho, I., Frassinetti, L., Frigione, D., Garzotti, L., Groth, M., Meigs, A., Menmuir, S., Maslov, M., Pereira, T., Thun, C. P. v., Reinke, M., Refy, D., Rimini, F., Rubino, G., Schneider, P., Sergienko, G., Uccello, A., Eester, D. V., and Contributors, J. (2022) “*Experimental study on the role of the target electron temperature as a key parameter linking recycling to plasma performance in JET-ILW*”, *Nuclear Fusion* **62**, 066030.
- [A16] Stagni, A., **Vianello, N.**, Tsui, C., Colandrea, C., Gorno, S., Bernert, M., Boedo, J., Brida, D., Falchetto, G., Hakola, A., Harrer, G., Reimerdes, H., Theiler, C., Tsitrone, E., Walkden, N., Team, t. T., and Team, t. E. M. (2022) “*Dependence of scrape-off layer profiles and turbulence on gas fuelling in high density H-mode regimes in TCV*”, *Nuclear Fusion* **62**, 096031.
- [A17] Tsui, C. K., Boedo, J. A., Brida, D., Février, O., Harrer, G. F., Perek, A., Reimerdes, H., Duval, B. P., Gorno, S., Sheikh, U. A., Theiler, C., **Vianello, N.**, Walkden, N., Wensing, M., Baquero-Ruiz, M., Team, T., and Team, M. (2022) “*Evidence on the effects of main-chamber neutrals on density shoulder broadening*”, *Physics of Plasmas* **29**, 062507.

- [A18] Zuin, M., Agostini, M., Auriemma, F., Bonfiglio, D., Cappello, S., Carraro, L., Cavazzana, R., Cordaro, L., Franz, P., Marrelli, L., Martinez, E., Puiatti, M., Piovani, R., Spizzo, G., Terranova, D., **Vianello, N.**, Zanca, P., Zaniol, B., and Zanutto, L. (2022) “Dynamics of ultralow- $q$  plasmas in the RFX-mod device”, *Nuclear Fusion* **62**, 066029.
- [A19] Chmielewski, P., Zagórski, R., Telesca, G., Brix, M., Huber, A., Ivanova-Stanik, I., Kowalska-Strzeciwiłk, E., Pereira, T., Réfy, D., Tamain, P., Vécsei, M., and **Vianello, N.** (2021) “TECXY simulations of Ne seeding in JET high power scenarios”, *Nuclear Materials and Energy* **27**, 100962.
- [A20] Henderson, S., Bernert, M., Giroud, C., Brida, D., Cavedon, M., David, P., Dux, R., Harrison, J., Huber, A., Kallenbach, A., Karhunen, J., Lomanowski, B., Matthews, G., Meigs, A., Pitts, R., Reimold, F., Reinke, M., Silburn, S., **Vianello, N.**, Wiesen, S., Wischmeier, M., team the, t. E. M., team, A. U., and contributors, J. (2021) “Parameter dependencies of the experimental nitrogen concentration required for detachment on ASDEX Upgrade and JET”, *Nuclear Materials and Energy* **28**, 101000.
- [A21] Mancini, D., Ricci, P., **Vianello, N.**, Giacomini, M., and Corrado, A. (2021) “Investigation of the density shoulder formation by using self-consistent simulations of plasma turbulence and neutral kinetic dynamics”, *Nuclear Fusion* **61**, 126029.
- [A22] Nem, R. D., Manz, P., Rasmussen, J. J., **Vianello, N.**, Walkden, N., Naulin, V., Sieglin, B., Herrmann, A., and Brida, D. (2021) “Quiescent regions below the X-point in ASDEX Upgrade”, *Plasma Physics and Controlled Fusion*.
- [A23] Tamain, P., Bufferand, H., Ciruolo, G., Giroud, C., Marandet, Y., Militello, F., Moulton, D., **Vianello, N.**, and contributors, J. (2021) “Impact of fine divertor geometrical features on the modelling of JET corner configurations”, *Nuclear Materials and Energy*, 100989.
- [A24] Grenfell, G., Spolaore, M., Abate, D., Carraro, L., Marrelli, L., Predebon, I., Spagnolo, S., Veranda, M., Agostini, M., Milligen, B. P. V., Cavazzana, R., Cordaro, L., Masi, G. D., Franz, P., Hidalgo, C., Martinez, E., Momo, B., Puiatti, M. E., Scarin, P., **Vianello, N.**, Zaniol, B., and Zuin, M. (2020) “Turbulent filament properties in L and H-mode regime in the RFX-mod operating as a tokamak”, *Nuclear Fusion*.
- [A25] Moradi, S., Anderson, J., Romanelli, M., Kim, H., Litaudon, X., Abduallev, S., Abhangi, M., Abreu, P., Afzal, M., and Aggarwal, K. (2020) “Global scaling of the heat transport in fusion plasmas”, *Physical review research* **2**, 013027.
- [A26] Réfy, D. I., Solano, E. R., **Vianello, N.**, Zoletnik, S., Dunai, D., Tál, B., Brix, M., Gomes, R., Birkenmeier, G., Wolfrum, E., Laggner, F., Griener, M., Asztalos, O., Delabie, E., team, A. U., Contributors, J., and MST1, E. (2020) “Identity of the JET M-mode and the ASDEX Upgrade I-phase phenomena”, *Nuclear Fusion* **60**, 056004.
- [A27] **Vianello, N.**, Carralero, D., Tsui, C. K., Naulin, V., Agostini, M., Cziegler, I., Labit, B., Theiler, C., Wolfrum, E., Aguiam, D., Allan, S., Bernert, M., Boedo, J., Costea, S., Oliveira, H. D., Fevrier, O., Galdon-Quiroga, J., Grenfell, G., Hakola, A., Ionita, C., Isliker, H., Karpushov, A., Kovacic, J., Lipschultz, B., Maurizio, R., McClements, K., Militello, F., Nielsen, A. H., Olsen, J., Rasmussen, J. J., Ravensbergen, T., Reimerdes, H., Schneider, B., Schrittwieser, R., Seliunin, E., Spolaore, M., Verhaegh, K., Vicente, J., Walkden, N., and Zhang, W. (2020) “Scrape-off layer transport and filament characteristics in high-density tokamak regimes”, *Nuclear Fusion* **60**, 016001.
- [A28] Agostini, M., **Vianello, N.**, Carraro, L., Carralero, D., Cavedon, M., Dux, R., Naulin, V., Spolaore, M., Wolfrum, E., and Team, t. E. M. (2019) “Neutral density estimation in the ASDEX upgrade divertor from deuterium emissivity measurements during detachment and shoulder formation”, *Plasma Physics and Controlled Fusion* **61**, 115001.
- [A29] Ionita, C., Schneider, B. S., Costea, S., Vasilovici, O., Kovačič, J., Gyergyek, T., Naulin, V., Rasmussen, J. J., **Vianello, N.**, Spolaore, M., Stärz, R., and Schrittwieser, R. (2019) “Plasma potential probes for hot plasmas”, *The European Physical Journal D* **73**, 73.
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## First author oral contribution

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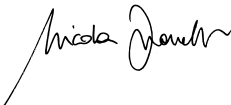
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# Declaration

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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.

Padova, January 10, 2024

  
(Nicola Vianello)

