

Personal information

Name	Nicola Vianello
Date and Place of birth	14 August 1975, Venice, Italy
Citizenship	Italian
Address	Via dei Giacinti 28, 35126 Padova, Italy
Work Address	Consorzio RFX C.so Stati Uniti 4, 35127 Padova, Italy
ORCID ID	0000-003-4401-5346
ResearcherID	B-6323-2008
Google Scholar	Google scholar

Education

1999	M. Sci. Physics , <i>Università degli Studi di Padova</i> . Grade: 110/110 cum Laude
2002	PhD in Energetics , <i>Università degli Studi di Padova</i>

Employment

2003–2015	<i>Consiglio Nazionale delle Ricerche and Consorzio RFX</i> , Researcher
2015–2016	<i>Swiss Plasma Center, Ecole Polytechnique Federale de Lausanne</i> , Researcher
2016–Date	<i>Consiglio Nazionale delle Ricerche and Consorzio RFX</i> , Researcher

Duties and Responsibilities

2011	Coordinator of the EFDA working group <i>3D field effects in edge and SOL and diagnostic development</i> under EFDA Transport Topical Group.
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 <i>B13-19 Investigation of M-Mode</i> on JET Tokamak campaigns C31-C34
2014	Scientific Coordinator of experiment <i>AUG14-2.2-3, SOL filamentary transport at high density</i> , under the MST1 Eurofusion Work-Packages.
2015-2016	Scientific Coordinator of experiment <i>TCV15-2.2-3: Filamentary Transport in the SOL</i> under MST1 Eurofusion Work-Package.
2015-2016	Scientific Coordinator of experiment <i>TCV15-1.5-1, Mitigation of high Z impurity accumulation through combined central ECRH and tailoring of MHD activity in high performance H-modes</i> under MST1 Eurofusion Work-Package.
2017-2018	Scientific Coordinator of Topic 21 <i>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</i> under MST1 Eurofusion Work-Package.
2019-20	Scientific Coordinator of Topic 16 <i>Effect of filamentary transport on heat and particle loads</i> under MST1 Eurofusion Work-Package.
2018-2019	Scientific Coordinator of JET Task T18-02 <i>Scrape-off layer and SOL- pedestal interaction</i> under JET1 Eurofusion Work-Package.
2019-20	Scientific Coordinator of M18-41 Experiment <i>Divertor geometry effect on detachment and SOL</i> under JET1 Eurofusion Work-Package

I've been involved in fusion plasma science since my M.Sci. thesis in Physics in 1999. During these 20 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 in fusion oriented experiments (Reversed Field Pinches, Tokamaks and Stellarators), with particular emphasis on the comparison with theoretical and numerical results. Main research subjects together with relevant publications 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 [4, 14, 15]
- (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 [2, 1, 3, 9]
- (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* [7, 8, 10]
- (d) Sheared flow generation:** 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 [5, 6]
- (e) Magnetic topology and its relation with plasma flow:** with emphasis on the effect of non-axisymmetric magnetic field perturbation on kinetic properties of the plasma, as plasma flow, ambipolar electric field and Plasma Wall Interaction [11, 12, 13]
- (f) Relationship between divertor condition and upstream SOL and pedestal properties:** with emphasis on the so-called *shoulder formation* and enhanced SOL transport observed in high density regimes both in L and H-Mode [0, 16, 17]

In all my career 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. I've always advocated the strong relationship existing between the pedestal and edge region and the dynamics of the SOL. I strongly believe that a real comprehension of the former can't neglect the influence of the latter. Given that my research interested involved investigation on both pedestal edge and SOL physics I believe I can bring a valuable contribution to the ITPA Edge and Pedestal group activity.

I've authored a total number of **133 Articles** in peer reviewed journal, **92 Conference proceedings** and personally presented **18 oral contributions**. The complete list of publications is available on request.
h-index factor: **27** according to ISI Web of Knowledge (last update November 4, 2019).

Cited publications

- [1] Antoni, V., Carbone, V., Cavazzana, R., Regnoli, G., **Vianello, N.**, Spada, E., Fattorini, L., Martines, E., Serianni, G., Spolaore, M., Tramontin, L., and Veltri, P. (2001) *Physical Review Letters* **87**, 045001.
- [2] Spada, E., Carbone, V., Cavazzana, R., Fattorini, L., Regnoli, G., **Vianello, N.**, Antoni, V., Martines, E., Serianni, G., Spolaore, M., and Tramontin, L. (2001) *Physical Review Letters* **86**, 3032–3035.
- [3] Carbone, V., Cavazzana, R., Antoni, V., Sorriso-Valvo, L., Spada, E., Regnoli, G., Giuliani, P., **Vianello, N.**, Lepreti, F., Bruno, R., Martines, E., and Veltri, P. (2002) *Europhys Lett* **58**, 349–355.
- [4] **Vianello, N.**, Spolaore, M., Serianni, G., Bergs aker, H., Antoni, V., and Drake, J. (2002) *Plasma Physics and Controlled Fusion* **44**, 2513–2523.
- [5] **Vianello, N.**, Spada, E., Antoni, V., Spolaore, M., Serianni, G., Regnoli, G., Cavazzana, R., Bergs aker, H., and Drake, J. R. (2005) *Physical Review Letters* **94**, 135001.
- [6] **Vianello, N.**, Antoni, V., Spada, E., Spolaore, M., Serianni, G., Cavazzana, R., Bergs aker, H., Cecconello, M., and Drake, J. R. (2006) *Plasma Physics and Controlled Fusion* **48**, S193–S203.
- [7] Spolaore, M., **Vianello, N.**, Agostini, M., Cavazzana, R., Martines, E., Scarin, P., Serianni, G., Spada, E., Zuin, M., and Antoni, V. (2009) *Physical Review Letters* **102**, 165001.
- [8] Furno, I., Spolaore, M., Theiler, C., **Vianello, N.**, Cavazzana, R., and Fasoli, A. (June 2011) *Physical Review Letters* **106**, 245001.
- [9] Sattin, F., **Vianello, N.**, Lorenzini, R., Gobbin, M., and Bonomo, F. (2011) *Plasma Physics and Controlled Fusion* **53**, 025013.
- [10] **Vianello, N.**, Naulin, V., Schrittwieser, R., M uller, H. W., Zuin, M., Ionita, C., Rasmussen, J. J., Mehlmann, F., Rohde, V., Cavazzana, R., and Maraschek, M. (2011) *Physical Review Letters* **106**, 125002.

- [11] **Vianello, N.**, Spizzo, G., Agostini, M., Scarin, P., Carraro, L., Cavazzana, R., De Masi, G., Martines, E., Momo, B., Rea, C., Spagnolo, S., Spolaore, M., Zuin, M., and the RFX-Mod Team. (June 2013) *Nuclear Fusion* **53**, 073025.
- [12] Spizzo, G., **Vianello, N.**, White, R. B., Abdullaev, S. S., Agostini, M., Cavazzana, R., Ciaccio, G., Puiatti, M. E., Scarin, P., Schmitz, O., Spolaore, M., Terranova, D., RFX, and Teams, T. (Apr. 2014) *Physics of Plasmas* **21**, 056102.
- [13] Rea, C., **Vianello, N.**, Agostini, M., Cavazzana, R., De Masi, G., Martines, E., Momo, B., Scarin, P., Spagnolo, S., Spizzo, G., Spolaore, M., and Zuin, M. (Sept. 2015) *Nuclear Fusion* **55**, 113021.
- [14] **Vianello, N.**, Rea, C., Agostini, M., Cavazzana, R., Ciaccio, G., De Masi, G., Martines, E., Mazzi, A., Momo, B., Spizzo, G., Scarin, P., Spolaore, M., Zanca, P., Zuin, M., Carraro, L., Innocente, P., Marrelli, L., Puiatti, M. E., and Terranova, D. (Jan. 2015) *Plasma Physics and Controlled Fusion* **57**, 014027.
- [15] **Vianello, N.**, Spolaore, M., Agostini, M., Cavazzana, R., De Masi, G., Martines, E., Momo, B., Scarin, P., Spagnolo, S., and Zuin, M. (Apr. 2016) *Plasma Physics and Controlled Fusion* **58**, 044009.
- [16] **Vianello, N.**, Tsui, C. K.-W. K.-W., Theiler, C., Allan, S., Boedo, J. A., Labit, B., Reimerdes, H., Verhaegh, K., Vijvers, W. A. J., Walkden, N., Costea, S., Kovačič, J., Ionita, C., Naulin, V., Nielsen, A., Rasmussen, J. J., Schneider, B. S., Schrittwieser, R., Spolaore, M., Carralero, D., Madsen, J., Lipschultz, B., and Militello, F. (Nov. 2017) *Nuclear Fusion* **57**, 116014.
- [17] **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. (2019) *Nuclear Fusion* **60**, 016001.