

Curriculum Vitae

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| Name | Roberto Pasqualotto |
| Work experience | |
| Dates | From 1991 - ongoing |
| Occupation | Since 2010: Research Director ("Dirigente di Ricerca", top level in the CNR researcher career) at Consiglio Nazionale delle Ricerche (CNR). 1991-2001: Researcher (1st level) at CNR. 2001-2010: Senior Researcher (2 nd level) at CNR. |
| Employer | Employed by Consiglio Nazionale delle Ricerche (CNR, National Research Council), at Institute for Plasma Science and Technology (ISTP). Seconded to Consorzio RFX (CRFX), corso Stati Uniti 4, Padova 35127, Italy, since 1995. |
| Main activities and responsibilities | <p>Experimental research on nuclear fusion plasma diagnostics, especially Thomson scattering (TS), and on energy confinement studies. Since 2009 also development of diagnostics for beam injectors and ion sources, mainly those for the ITER Neutral Beam Test Facility at Consorzio RFX.</p> <p>2017- ongoing, Project leader for EU contribution to development of JT60SA Thomson scattering. Responsible of Consorzio RFX contribution and, since 2019, project leader of the EU contribution to the development of the Thomson scattering diagnostics for the JT60SA experiment and procurement in kind of some components, in collaboration with QST Japanese laboratory. The EU supply comprises optical fibers, polychromators, laser, collection optics and their support structure. I am coordinating a team of two physicists of CRFX, one mechanical engineer of Institute of Cryogenics and Isotopic Technologies (Romania) and four physicists of Istituto di Fisica Applicata "Nello Carrara" in Florence, Italy.</p> <p>2009- ongoing, Responsible of Diagnostics of the ITER Neutral Beam Test Facility at Consorzio RFX Responsible of diagnostics development and operation, coordinating a team of about 15 physicists and engineers. Procurement of the diagnostics for the two experiments in the facility is funded by F4E contracts, including 5 ppy/year manpower for design, procurement and installation, in the period 2015-2024. This activity involves collaborations with both national (Milano-Bicocca University and ISTP-CNR Milano), European (IPP-Garching in Germany, CCFE-Culham in UK, CEA-Cadarache in France), Indian and Japanese laboratories.</p> <p>2007- 2017, Coordination of CRFX contribution to development of ITER core Thomson scattering. Responsible of Consorzio RFX contribution to EFDA contract TW6-TPDS-DIADES (2006-2008) and F4E contract F4E-OPE-264 (2010-2011) for ITER core LIDAR diagnostic. Coordinator of the RFX participation to the Consortium of European Laboratories that till 2014 was proposing to develop the ITER core LIDAR Thomson scattering diagnostic. Afterwards I contributed to the design activities of the revised diagnostic concept coordinated by ITER Organization, focusing on calibration methods and polarimetric TS.</p> <p>2001-2009, project leader of the "High Resolution Thomson Scattering" project at the JET experiment. Management of the EFDA contract to Consorzio RFX; coordination of the project team of 15 physicists/engineers from different European fusion laboratories (RFX, ENEA, UKAEA); collaboration with General Atomics for an in kind contribution; supervision of contracts; responsible for design, procurement, installation, commissioning and final performance. Diagnostic operation started in 2006, better resolving the edge and internal temperature and density profiles, with significant contributions to physics studies at JET.</p> <p>2000-2004: Project leader of the EFDA-JET project "Edge LIDAR Thomson scattering detection system". Development of new detectors for the edge LIDAR Thomson scattering diagnostic at JET, better performing especially in the infrared spectral region.</p> <p>1995-2009, Responsible of development, operation and data analysis of the two Thomson scattering diagnostics in RFX. The first TS diagnostic in RFX was completed in 1997 then upgraded in 2004 for characterization of advanced confinement regimes. An edge TS system started operation in 2008. Management of budget, contracts and technical services, supervision of PhD and undergraduate students.</p> <p>1990- 2009, Participation in and coordination of plasma energy confinement and transport studies. Investigation of energy confinement in standard RFP magnetic configurations, limited by the intrinsic internal magnetic chaos, and in advanced confinement regimes, where the intrinsic transport is reduced, especially in the plasma core, with a transition from the standard chaotic multiple helicity state to a quasi single helicity state, characterized by a hot island in the plasma core.</p> <p>1990-2000, Contributions to infrared thermographic, visible imaging, Soft-X-Rays and laser blow-off diagnostics in RFX. 2007-2009, Coordination of Information Technology office at CRFX.</p> |
| Dates | From 2002 to 2005 |
| Occupation | Member of the EFDA-JET Close Support Unit, as responsible Officer for Task Force Diagnostics in the Programme Department |
| Employer | EFDA Close Support Unit (CSU) at JET, Culham Science Centre, Abingdon OX14 3DB, UK. Seconded from Consiglio Nazionale delle Ricerche - Consorzio RFX, in the framework of EFDA. |
| Main activities and responsibilities | Responsible for diagnostics in the JET experimental programme: monitor the contracts to Associations and the JET Operation Contract with respect to diagnostics; contribute to organise and coordinate the groups of experts assigned to each diagnostic; coordinate scientific staffing of experimental campaigns; contribute to the assessment of 18 diagnostics enhancement projects for JET; responsible for the enhancement project "High Resolution Thomson Scattering"; direct participation to the experimental sessions as diagnostics coordinator. |

Curriculum Vitae

Education From 1990 to 1992, **Research Doctorate (PhD) in Energetics**, University of Padova, Italy
1989, **Master Diploma in Plasma engineering and controlled thermonuclear fusion**, University of Padova, Italy
From 1982 to 1988, **University degree (diploma di laurea) in Physics**, University of Padova, Italy

Other achievements

Publications:

More than 230 publications in refereed international journals; about 100 contributions to conference proceedings.
H-index 38 (ISI Web of Knowledge).

Conferences:

- 5 invited talks and 6 oral presentations at international conferences;
- Deputy chairman of the 14th International Symposium on Laser-Aided Plasma Diagnostics, Castelbrando, Treviso, 21-24/09/2009
- Member of the Program Committee of the 41 EPS Plasma Physics Conference 2014.
- Member of the Scientific Advisory Committee of the Intern. Conf. on Fusion Reactor Diagnostics, Varenna (Italy) Sept.9-13,2013.

Reviewer of more than 130 papers for the most important scientific journals of the field:

Review of Scientific instruments, Fusion Engineering and Design, Fusion Science & Technology, Plasma Physics and Controlled Fusion, Journal of Physics D: Applied Physics, Chemical Physics, Nuclear Fusion, Measurement Science and Technology, IEEE Transactions on Nuclear Science, Plasma Sources Science and Technology, AIP Conference Proceedings, Physica Scripta, ...

Reviewer of 2015, 2017, 2020 PRIN projects, of 2020 FISR projects, of VQR 2011-2014 and of University of Pavia and University of Insubria research proposals.

Editor of the Proceedings of the 14th International Symposium on Laser-Aided Plasma Diagnostics, 2009

Committees

- Since 2015 member of REPRISE, the Register of Expert Peer Reviewers for Italian Scientific Evaluation, of the Ministry of Education, University and Research (MIUR)
- 2012-2015, member of the Ministry of Education, University and Research (MIUR) list of experts for evaluation of industrial research projects (Albo Esperti Ricerca Industriale - D.Lgs. 297/1999).
- 2012-2014: member of the Progr. Advisory Committee of the ELISE experiment at IPP-Max Planck Institute, Garching (Germany)
- 2010-2012: invited expert to the Conceptual Design Reviews of the edge and divertor Thomson scattering and of the Neutral Particle Analyzer diagnostics for ITER
- Since 2005, member of the "Specialistic Working Group on Laser-Aided diagnostics" of ITPA – Diagnostics
- 2004-2005 member of the evaluation committee of European experts set up to review between the proposals of the second phase of diagnostic enhancements for JET

Teaching experience:

- Italian scientific qualification as Full Professor in Experimental Physics of Matter
- Lessons on plasma diagnostics at Joint International Doctorate in Fusion Science and Engineering
- supervisor of 18 graduate and undergraduate students for their thesis work.

Selection of Roberto Pasqualotto's publications

- R. Pasqualotto et al., "Conceptual design of JT-60SA edge Thomson scattering diagnostic", Journal of Instrum. 15, C01011 (2020)
L. Giudicotti et al., "Design of Thomson scattering diagnostics for the Divertor Tokamak Test (DTT) Facility", Journal of Instrum. 15, C01042 (2020)
R. Pasqualotto et al., "Plasma light detection in the SPIDER beam source", Fusion Engineering and Design, 146 (2019) 709-713
L. Giudicotti et al., "First observation of the depolarization of Thomson scattering radiation by a fusion plasma", Nucl. Fusion 58 (2018) 044003
R. Pasqualotto et al., "A suite of diagnostics to validate and optimize the prototype ITER neutral beam injector", Journal of Instrum. 12 C10009 (2017)
R. Scannell et al., "Design Advances of the Core Plasma Thomson Scattering Diagnostic for ITER", Journal of Instrum. 12 C11010 (2017)
O. McCormack et al., "Dual-laser, self-calibrating Thomson scattering measurements in RFX-mod", Plasma Phys. Control. Fusion, 59 (2017) 055021
L. Giudicotti and R. Pasqualotto, "Rotational Raman scattering as a source of polarized radiation for the calibration of polarization-based Thomson scattering", Plasma Phys. Control. Fusion 57 (2015) 035001
L. Giudicotti, R. Pasqualotto, "Dual-laser calibration of Thomson scattering systems in ITER and RFX-mod", Nucl. Fusion 54 (2014) 043005
R. Pasqualotto et al., "Design of a visible tomography diagnostic for negative ion RF source SPIDER", Fus. Eng. and Design, 88 (2013) 1253
R. Pasqualotto, "Design of laser-aided diagnostics for the negative hydrogen ion source SPIDER", Journal of Instrumentation 7, C04016 (2012)
G.A. Naylor et al., "The ITER Thomson scattering core LIDAR diagnostic", Journal of Instrumentation 7, C03043 (2012)
R. Pasqualotto et al., "Diagnostics of the ITER neutral beam test facility", Rev. Sci. Instrum. 83, 02B103 (2012)
R. Pasqualotto et al., "Design of a cavity ring-down spectroscopy diagnostic for negative ion rf source SPIDER", Rev. Sci. Instr. 81, 10D710 (2010).
R. Pasqualotto et al., "Spectroscopic diagnostics for the negative ion RF source SPIDER", Nucl. Instr. and Meth. in Phys. Res. A 623 (2010) 794
R. Lorenzini et al., "Self-organized helical equilibria as a new paradigm for ohmically heated fusion plasmas", Nature Physics, 5 (8), 570 Aug 2009
R. Lorenzini et al., "Single helical axis states in reversed field pinch plasmas", Physical Review Letters, 101, 025005 (2008)
A. Alfier, R. Pasqualotto et al., "Electron temperature profiles in RFX-mod", Plasma Phys. Control. Fusion 50 (2008) 035013
A. Alfier, R. Pasqualotto, "The new Thomson scattering diagnostic on RFX-mod", Rev. Sci. Instrum., 78, 013505 (2007)
R. Pasqualotto et al., "High resolution Thomson scattering for Joint European Torus (JET)", Rev. Sci. Instrum., 75, 3891 (2004)
R. Pasqualotto, P. Nielsen, L. Giudicotti, "The new RFX Thomson scattering system", Rev. Sci. Instrum., 72 (1), 1134 (2001)