

# Curriculum Vitae

## Prof. Alessandra Giunta

### Personal details

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### Qualifications

<b>July 2011</b>	PhD in Physics, Department of Physics, University of Strathclyde, UK.
<b>July 2005</b>	Degree in Physics ("Laurea in Fisica") with specialization "Astrophysics and Space Physics", Department of Physics and Astronomy, University of Catania, Italy, 1st Class (110/110 e lode).

### Career history

<b>December 2024-present</b>	<b><u>Associate Professor (Professore di seconda fascia)</u>, in the scientific education group 02/PHYS-05 Astrophysics and Cosmology, Space Physics, Earth and Climate Physics; scientific education sector PHYS-05/B Physics of the Earth System, Planets, Space and Climate, Department of Physics and Astronomy "Ettore Majorana", University of Catania (Italy).</b>
<b>October 2013-December 2024</b>	<b><u>Senior Scientist (band E): Solar Physicist (Solar Orbiter/SPICE RAL Operation Scientist and Co-Investigator) and Spectroscopist, Rutherford Appleton Laboratory, UK Research and Innovation, Science and Technology Facilities Council, UK</u></b>  Responsible of scientific support for the development of the Spectral Imaging of the Coronal Environment (SPICE) spectrometer, which includes instrument radiometric calibration, preparation for science operations in collaboration with the SPICE team and other Solar Orbiter instruments (attending the operation meetings and workshops and being a member of the science operation team) and preparation of post-launch commissioning and operations. STFC RAL In-House Research Grant (in collaboration with JET facilities, Culham Science Centre, UK): updating and maintaining the fundamental and derived atomic data for key elements (e.g. magnesium, sulphur, neon, silicon, argon, iron) adopted for the analysis of current and future solar observations and for ground calibration of UV spectrometers.
<b>January 2025-present</b>	<b><u>Fellow at INAF (Istituto nazionale di Astrofisica) - Osservatorio Astrofisico di Catania, Catania, Italy</u></b>
<b>December 2024-present</b>	<b><u>Visiting Scientist at Rutherford Appleton Laboratory (RAL Space), UK Research and Innovation, Science and Technology Facilities Council, UK</u></b>
<b>January 2018-December 2020</b>	<b><u>Visiting Fellow ("Contratto di associatura") at the I.S.T.P. Istituto per la Scienza e Tecnologia dei Plasmi - CNR, Milan, Italy</u></b>  Research support and collaboration on plasma diagnostics for the GyM (Gyrotron Machine) magnetically confined linear device, specifically advanced theoretical atomic modelling and data analysis for the interpretation of the argon plasma.
<b>August 2011-September 2013</b>	<b><u>Research Fellow, Department of Physics, University of Strathclyde, UK</u></b>  This post was within the Euratom Framework 7 Support Action on atomic physics for magnetic confinement fusion research in Europe, called ADAS (Atomic Data and Analysis Structure)-EU.

Main duties included providing calculations of atomic data and analysis of astrophysical and fusion plasmas. In particular I helped create the infrastructure for Generalised Collisional-Radiative (GCR) population and coefficient modelling for medium-weight species, within the work packages WP27 (Distorted Wave baseline atomic calculations using AUTOSTRUCTURE code) and WP28 (GCR ionisation and recombination) of the ADAS-EU project. Other responsibilities were dissemination and training (supporting visits to Euratom Associated Laboratories and intensive ADAS courses).	
<b>April 2011-July 2011</b>	<b>Research Assistant, Department of Physics, University of Strathclyde, UK</b>
Interpretation of transient ionisation in the context of both solar flares and nuclear fusion (in particular within the MAST-Upgrade Spectroscopic Divertor Diagnostic Project) and update of atomic data, including carbon, oxygen and argon, for astrophysical and fusion investigations.	
<b>March 2011</b>	<b>Research Contract, Armagh Observatory, UK</b>
Investigation and analysis of line contribution functions under non-equilibrium conditions and comparison with past solar observations (from the Solar Maximum Mission) and recent Interface Region Imaging Spectrograph (IRIS) measurements.	
<b>August 2006- November 2006</b>	<b>Research Contract, INAF-Astrophysics Observatory, Catania, Italy</b>
This post was within the Italian Space Agency (ASI) project “Study of the solar atmosphere physical conditions using advanced diagnostic techniques”. Main duties included the identification of solar spectral lines in the UV-EUV range, observed by the Coronal Diagnostic Spectrometer (CDS) aboard the Solar and Heliospheric Observatory (SOHO) and the use of the differential emission measure diagnostic technique to analyse the transition region and coronal spectrum in solar active regions.	

## Participation in observational and experimental campaigns

<b>February 2020-present</b>	Coordination and support of observational campaign with Solar Orbiter. Solar Orbiter Observing Plan (SOOP) coordinator of SPICE full disk mosaic, Connection Mosaic, Earth Quadrature, Composition versus Height, High Latitude Polar Survey, SPICE Full Disk Mosaic; SPICE contact point for the following SOOPs: Slow Wind Connection, Coronal Hole Boundary Expansion, Coronal Dynamics, RS Burst.
<b>September 2011, December 2013</b>	XRF measurements using the handheld analyser Innov-X system Alpha 4000 and Raman measurements using BTR111 MiniRam TM (Università di Messina, Messina, Italy)
<b>July 2012</b>	Co-Investigator in the experiment for NRCA (Neutron Resonance Capture Analysis) and ND (Neutron Diffraction) using INES instrument (ISIS facilities, Harwell Campus, Chilton, UK - experiment number RB1261011)
<b>March 2010</b>	Spectroscopic solar observations using SoHO/CDS and Hinode/EIS (HOP155)
<b>April 2009</b>	Spectroscopic solar observations using SoHO/SUMER, SoHO/CDS and Hinode/EIS (JOP 220/HOP109)
<b>August 2004, October 2005</b>	Observations of RSCVn system ii Peg (“M. G. Fracastoro” Mountain Station Serra La Nave, Mt. Etna, Catania, Italy)

## Teaching activities

<b>October 2025-present</b>	Plasma Spectroscopy – MSc in Physics (50 hours lecturing plus exams and tutoring), University of Catania, Italy Astrophysics - MSc in Mathematics (47 hours lecturing plus exams and tutoring), University of Catania, Italy
<b>January-September 2025</b>	Physics 1 (Kinematics, Dynamics, Fluidics and Thermodynamics)– Industrial and Management Engineering (87 hours lecturing plus exams and tutoring), University of Catania, Italy

Teaching and tutoring within the ADAS-EU training courses and preparation of most of the tutorial material, in particular all the demonstration scripts; providing in addition user guides for each module, which are available in the ADAS-EU website ([http://www.adas-fusion.eu/course\\_material\\_2013.php](http://www.adas-fusion.eu/course_material_2013.php)).

Main lectures performed: Excited population structure, Ionisation state and Differential Emission Measure.

<b>July 2013</b>	National Fusion Research Institute, Daejeon, Korea
<b>June 2013</b>	National Institute for Fusion Science, Toki, Japan
<b>May-June 2013</b>	Academy of Sciences, Institute of Plasma Physics, Hefei, China
<b>September-October 2012</b>	CEA-Cadarache, France
<b>March 2012</b>	Consorzio RFX, Padua, Italy
<b>October 2011</b>	Auburn University, Alabama, US

### International Space Science Institute research teams

<b>2017 - 2021</b>	ISSI (International Space Science Institute – Bern, Switzerland) team “Linking the Sun to the heliosphere using composition data and modelling ”
<b>2013 - 2016</b>	ISSI team “Non-Equilibrium Processes in the Solar Corona and their Connection to the Solar Wind”

### Referee role for international journals

<b>2025</b>	Philosophical Transactions of the Royal Society A, ISSN: 1471-2962
<b>2019-present</b>	Spectroscopic Letters, ISSN: 0038-7010
<b>2017-present</b>	Fusion Science & Technology, ISSN: 1536-1055
<b>2015-present</b>	Astronomy and Astrophysics, ISSN: 0004-6361
<b>2014-present</b>	The Astrophysical Journal, ISSN: 0004-637X

### Membership

<b>2018-present</b>	Appointed member of the UK AMOR (Atomic, Molecular, Optical R-matrix) advisory committee.
<b>2014-present</b>	Asia Oceania Geosciences Society (AOGS) member.
<b>2013-present</b>	UK APAP (Atomic Processes for Astrophysical Plasmas) group (University of Cambridge and University of Strathclyde, UK) member.
<b>2008-present</b>	Royal Astronomical Society (RAS) member.
<b>2007-present</b>	ADAS group (and ADAS-EU from 2011 to 2013) member.