

CURRICULUM VITAE ET STUDIORUM

Roberto Aloisio

Present Position

Full Professor – Theoretical Astroparticle Physics
Gran Sasso Science Institute (GSSI)
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Career

2017-2019: Associate Professor – Gran Sasso Science Institute – L'Aquila (Italy)
2011-2017: Researcher, INAF – Osservatorio Astrofisico Arcetri – Firenze (Italy)
2005-2011: Researcher, INFN – Laboratori Nazionali Gran Sasso – L'Aquila (Italy)
2002-2005: Post Doc, INFN – Laboratori Nazionali Gran Sasso – L'Aquila (Italy)
2002: Visiting scholar at the Kavli Institute and at the Astronomy and
Astrophysics Department of the University of Chicago (USA)
2001: Research Contract, Department of Physics University of Ferrara (Italy)
1999: Visiting PhD student Department of Theoretical Physics University of
Zaragoza (Spain)

Education

16/02/2001: PhD in Physics University of L'Aquila (Italy)
Thesis “*Non-abelian gauge theories at finite density on the lattice*”.
10/10/1997: Laurea degree, 110/110 cum laude, University of L'Aquila (Italy)
Thesis “*Phase transitions in QCD at finite density on the lattice*”.

Awards

2016: distinguished former student of the Department of Physics of L'Aquila
University, award assigned in occasion of the 50th anniversary of the foundation
of the Department of Physics.
1996: annual scholarship for the Laurea thesis in theoretical physics. Award assigned
and funded by the Italian Institute for Nuclear Physics (INFN).

Scientific Interests

- Origin and propagation of cosmic rays, gamma rays and astrophysical neutrinos
- Theories of Dark Matter and its indirect detection
- Non thermal processes in astrophysics
- Theories with Lorentz invariance violations and the quantum gravity regime

Impact of the research activity

I have published more than 50 papers on international refereed journals (<http://goo.gl/2aSNkb>), most of which with no more than 1-2 co-authors, collecting more than 2000 citations with an average citations per paper of 36 and a Hirsch number $H=26$, as extracted from the SPIRES database (<http://goo.gl/KasdR>).

Colloquia and Invited Talks

In the following the list of invited talks, reviews and colloquia at international conferences, Universities and research centers given in the last five years.

- Invited review talk on “*Transition Between Galactic and Extragalactic Cosmic Rays*”, Symposium 20th Anniversary of the Foundation of the Pierre Auger Observatory, Malargue (Argentina), November 14-16, 2019.
- Invited review talk on “*Ultra High Energy Cosmic Rays and the Highest Energies Universe*”, 6th Symposium on Prospects in the Physics of Discrete Symmetries (DISCRETE 2018), Vienna (Austria), November 26-30, 2018.
- Invited review talk on “*Ultra High Energy Cosmic Rays: Origin, Composition and Spectrum*”, 7th Roma International Conference on Astroparticle Physics (RICAP18), Rome (Italy), September 04-07, 2018.
- Invited review talk on “*High energy cosmic rays and the production of cosmogenic neutrinos and gamma rays*”, PAHEN international conference, Naples (Italy), September 25-27, 2017.
- Invited review talk on “*The physics of ultra-high energy cosmic rays and the extreme universe frontier*”, JEM-EUSO meeting Chicago (USA), June 19-23, 2017.
- Invited review talk on “*The physics of ultra-high energy cosmic rays: spectra, composition and the transition between galactic and extragalactic cosmic rays*”, international conference on ultra-high energy cosmic rays, Kyoto (Japan), October 11-14, 2016.
- Invited talk on “*Neutrinos at extreme energies*”, 14th international conference on Topics in Astroparticle and Underground Physics (TAUP 2015), Torino (Italy), September 7-11, 2015.
- Invited review talk on “*Ultra high energy cosmic rays and neutrinos*”, 9th Cosmic ray seminar: the status and the future of the UHE cosmic ray physics in the post LHC era, Gallipoli (Italy), September 14-16, 2015.
- Invited review talk on “*Gamma ray astrophysics: the relation with cosmic rays and neutrinos*”, workshop on the future research on cosmic rays, La Palma, Canarias (Spain), August 26-29, 2015.
- Invited review talk on “*Cosmic Rays propagation*”, 40th COSPAR scientific assembly, Moscow (Russia), August 2-10, 2014.
- Invited review talk on “*Cosmic Rays and Gamma Rays*”, SciNeGHE conference, Lisbon (Portugal), June 4-6, 2014.
- Colloquium on “*Ultra High Energy Cosmic Rays*”, New York University at Abu Dhabi (United Arab Emirates), February 11, 2014.

Teaching activity

- May 2018: Lectures series on “*High Energy Radiation Processes in Astroparticle Physics*” given at the DIAS Summer School on High Energy Astrophysics, Dublin (Ireland).
- June 2018: Lectures series on “*Cosmic Rays and their Secondary Emissions*” given at the XXX International Seminar on Nuclear and Sub-Nuclear Physics – Francesco Romano, Otranto (Italy).
- 2013-present: course on “*High Energy Astrophysics*”, Gran Sasso Science Institute, L’Aquila (Italy).
- 2013-present: Supervisor and co-supervisor of three PhD Thesis, Gran Sasso Science Institute.

- 2005-2010: Supervisor and co-supervisor of two Laurea Thesis and three PhD Thesis, University of L'Aquila.
- 2012-2013: Course on “*High Energy Astrophysics*”, University of L'Aquila.
- 2005-2008: Lectures on “*High Energy Astrophysics*”, appointed as assistant of prof. A.F. Grillo, University of L'Aquila.
- 2002-2006: Lectures on “*Nuclear and sub-nuclear Physics*”, appointed as assistant of prof. S. Petrerà, University of L'Aquila.

Activities for the Scientific Community

- Co-editor, together with E. Coccia and F. Vissani, of the book “*Multiple Messengers and Challenges in Astroparticle Physics*”, published by the Springer Books publishing house 2018, <https://www.springer.com/gp/book/9783319654232>.
- Member of the Local Organizing Committee of the conference “Cosmic Rays Transport and Energetic Radiation – CRATER2018”, Gran Sasso Science Institute, May 2018.
- Convener of the session on “*Cosmic Rays*” of the conference “Multi Messengers and Challenges in Astroparticle Physics”, Gran Sasso Science Institute, L'Aquila (Italy), October 2014.
- Co-editor, together with E. Coccia, N. Fornengo and L. Pandola, of the proceedings of the 11th conference on Topics in Astroparticle and Underground Physics (TAUP), Rome (Italy), June 2009.
- Convener of the session on “*High energy Astrophysics*” of the 11th TAUP conference, Rome (Italy), June 2009.
- Convener of the session of “*Standard Model Tests in High Energy Astrophysics*” of the International Symposium on Astroparticle Physics, Golden Colorado (USA) May 2008.
- 2005-2009: coordinator of the seminars of the Gran Sasso National Laboratory (Istituto Nazionale Fisica Nucleare).
- Referee for: *Physical Review*, *Physical Review Letters*, *Astroparticle Physics*, *Journal of Cosmology and Astroparticle Physics (JCAP)*, *Astrophysical Journal* and *Astrophysical Journal Letters*.

Memberships, Working Groups, Projects Coordination – Astroparticle Physics

- 2018-present: coordinator of the proposal “NUSES – *A pathfinder for studying astrophysical neutrinos and electromagnetic signals of seismic origin from space*”. A joint GSSI Thales-Alenia Space initiative for the construction of a new satellite dedicated to fundamental research in Astroparticle Physics.
- 2018-present: coordinator of the joint GSSI-University of L'Aquila-National Gran Sasso Laboratory group of INFN.
- 2018-present: Member of the scientific advisory committee of the International Seminar on Nuclear and Subnuclear Physics “Francesco Romano”. <https://agenda.infn.it/event/18060/page/4290-committees>.
- 2018-present: Member of the academic council of the “International Doctoral Network in Particle Physics, Astrophysics and Cosmology” (IDPASC), <https://idpasc.lip.pt/organic>.
- 2017-present: Member of the collaboration “POEMMA – *Probe of Extreme Multi Messengers Astrophysics*”, a satellite mission proposal coordinated by the University of Chicago and designed to establish charged-particle astronomy with

ultra-high energy cosmic rays and to observe astrophysical tau neutrinos (<https://poemma.uchicago.edu/>).

- 2013-present: Member of the board of professors of the GSSI's PhD program in Astroparticle Physics, <http://www.gssi.it/education/astroparticle-physics-education>.
- 2014-2016: convener of the working group on “*Cosmic Radiation*” in the framework of the “*What Next*” initiative of Istituto Nazionale Fisica Nucleare.
- 2013-2016: member of the board of the Gran Sasso Science Institute, INFN's Center for Higher Education.
- 2012-present: member of the Cerenkov Telescope Array (CTA) collaboration.
- 2009-2012: member of the scientific board of the “*CFA – Gran Sasso Center for Astroparticle Physics*”, a joint research center of the National Gran Sasso Laboratory and the Physics Departments of L'Aquila and Rome Tor Vergata Universities, funded by the EU through the program PO-FSE 2007-2013 (<http://cfa.lngs.infn.it/old/people.html>).
- 2007-2009: principal investigator of the joint research group on “*Ultra High Energy Cosmic Rays and Neutrinos*” of the National Gran Sasso Laboratory (INFN) and the Arcetri Astrophysical Observatory (INAF), funded by the Italian Space Agency under the contract n. ASI-INAF I/088/06/0.
- 2006-2009: member of the board of the Italian Space Agency on “*Theoretical Studies in High Energy Astrophysics*” (WP 1300).
- 2004-2011: scientific secretary of the Scientific Committee of the Gran Sasso National Laboratory.
- 2001-2003: member of the Scientific Objective Working Group of the Extreme Universe Space Observatory (EUSO).

Memberships, Working Groups, Projects Coordination – Interdisciplinary

- 2019-present: member of the GILT working group, a joint initiative of GSSI, INFN, L-Foundry and Thales-Alenia Space dedicated to technology and knowledge transfer between public research institutions and private firms.
- 2018-present: coordinator of the GSSI's “*Center for Urban Informatics and Modeling*”, a GSSI's research project funded by the Italian government and focused on the city of L'Aquila.
- 2018-present: GSSI's representative member in the board of the “*Fondazione openpolis*” (<http://www.openpolis.it/fondazione/chi-siamo/>).
- 2017-present: chairman of the GSSI's Internal Evaluation Committee (<http://www.gssi.infn.it/institute/organization>).
- 2015-present: coordinator of the project *Open Data Ricostruzione*, a research activity of GSSI in collaboration with the Municipality of L'Aquila, the reconstruction offices and the University of L'Aquila, appointed by the Italian government, on the reconstruction process of L'Aquila and its territory after the earthquake of April 2009 (<http://opendataricostruzione.gssi.it>).
- July 2009: member of the National Gran Sasso Laboratory delegation to the workshop “*L'Aquila Earthquake: Re-launching the Economy*” organized by the OECD Directorate for Public Governance and Territorial Development and the Italian Minister of Economy and Finance (<https://www.oecd.org/cfe/regional-policy/laquilaearthquakere-launchingtheeconomy.htm>).