

Prof. Annalisa D'ANGELO – CV, May 2019

- Born in Rome, Italy, on August 30th 1963
- Nationality: Italian
- Mailing address: Dipartimento di Fisica
Universita' di Roma "Tor Vergata",
Via della Ricerca Scientifica, 1
I – 00133 Roma, Italy
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Working Experience:

- 2001 - present** Associate Professor in Nuclear and Sub-Nuclear Physics FIS/04 at the Physics Department of the University of Roma "Tor Vergata", (since November 1st 2001).
- 1991 - 2001** Researcher at the National Institute of Nuclear Physics at Roma "Tor Vergata" (INFN Sezione di Roma "Tor Vergata").

Education:

- 2012 - 2020** Obtains the National Scientific Qualification for First Rank Professorship in the field "Experimental Physics of Fundamental Interaction".
- 1988** "Laurea" in Physics (equivalent to a Master Degree) at University of Roma "La Sapienza" on September 29th 1988, final mark 110/110 cum Laude

Membership in Scientific Committees:

- 2015** Member of the Review Panel for the German Science Research Funds project: Proposal of the University of Mainz for a Collaborative Research Centre (CRC) "The Low-Energy Frontier of the Standard Model: From Quarks and Gluons to Hadrons and Nuclei".
- 1999 – 2001** Member of the INFN Technology Transfer Committee.
- 1998 – 2008** Member of the Executive Committee of the GRAAL Collaboration dedicated to the study of photo-nuclear reactions on protons and deuterium using the GRAAL polarized photon beam at the European Synchrotron Radiation Facility, Grenoble (France) and responsible of the Tagging System of the Facility.
- 1997 – 2007** Member of the Executive Committee of the Legs Spin Collaboration dedicated to the study of photo-nuclear reactions on protons and deuterium targets using the polarized LEGS photon beam on frozen-spin polarized HD targets at the Brookhaven National Laboratory (USA).
- 1992 – 2000** Member of the Commissione Scientifica Nazionale III of INFN for the Sezione di Roma "Tor Vergata". From 1997 to 2000 **Chair** of the I Sub-Commission reporting on experiments dedicated to the study of nuclear and sub-nuclear reactions induced by electromagnetic probes.

Referee Activity for Government Funding Agencies

- 2016 - present** Office of Nuclear Physics (NP), Department of Energy (DOE), USA
- 2015 - present** Deutsche Forschungsgemeinschaft (German Research Foundation) – DFG, Germany

Research Activity

- 2017 – present** Member of the EIC User Group, USA.
- 2013 – present** Member of the HPS collaboration, dedicated to the search of a “heavy photon”, candidate mediator between standard and dark particles, in Hall-B at the Thomas Jefferson National accelerator Facility in Newport News, USA.
- 2008 – present** Member of the CLAS collaboration dedicated to the study of photo-reaction and electro-scattering experiments using the CLAS and the upgraded CLAS12 set-up in Hall-B at the Thomas Jefferson National accelerator Facility in Newport News, USA.
- 2003 – 2008** Member of the LEGS-SPIN collaboration dedicated to the study of photo-reactions on frozen spin polarized HD targets with the LEGS polarized Compton backscattering photon beam at the NSLS at Brookhaven National Laboratory, USA.
- 1997 – 2008** Member of the GRAAL collaboration dedicated to the study of photo-reactions on H₂ and D₂ targets with the GRAAL polarized Compton backscattering photon beam at the ESRF at Grenoble, France.
- 1989 – 2003** Member of the He3-LEGS collaboration dedicated to the study of photo-nuclear reactions on He3 and He4 targets with the LEGS polarized Compton backscattering photon beam at the NSLS at Brookhaven National Laboratory, USA.
- 1989 – 1993** Member of the LADON research group dedicated to the study of photo-nuclear reactions with the LADON polarized Compton backscatterig photon beam at the ADONE accelerator at INFN Laboratori Nazionali di Frascati.

Main Research Responsibilities

- 2017 – present** Institutional Representative for the University of Roma Tor Vergata and INFN Roma Tor Vergata of the EIC User Group, USA.
- 2016-present** PI and Contact Person of the Run group K proposal PR-16-010 “A search for Hybrid Baryons in Hall B with CLAS12”, approved for 100 PAD days by the JLAB PAC44 (https://www.jlab.org/exp_prog/proposals/16/PR12-16-010.pdf)
- 2013-present** Institutional Representative for the University of Roma Tor Vergata and INFN Roma Tor Vergata for the HPS collaboration, dedicated to the search of a “heavy photon”, candidate mediator between standard and dark particles.
- 2009-present** Local Responsible of the JLAB12 experiment, reporting to the INFN III National Scientific Committee and dedicated to electron scattering and photo-induced reactions on nucleons and nuclei at JLAB.
- 2001 – 2008** Safety Co-Responsible of the GRAAL facility at the European Synchrotron Radiation Facility, Grenoble (France).
- 1997 – 1999** Local Responsible of the LABRO experiment, reporting to the INFN III National Scientific Committee and dedicated photo-induced reactions on nucleons and light nuclei at the LEGS facility of the Brookhaven National Laboratory.
- 1995 – 2008** Responsible of the GRAAL tagging system at the European Synchrotron Radiation Facility, Grenoble (France).

Publications:

- ◇ **Co-author of 236 articles indexed on Isi Web of Science and Scopus**
- ◇ Number of papers published in international refereed journals

172

◇ Number of contributions to books or essays	1
◇ Number of contributions to indexed conference proceedings	63
◇ Total number of citations	3519
◇ H-index	40

Referee Activity for International Journals

- Physical Review Letters – American Physical Society
- Physics Letters B – Editor Elsevier
- European Physics Journal A – Editor Springerlink.
- Physical Review ST AB – American Physical Society

European And Government Project Funds

UE - FP7	Participant of the Hadron Physics 3 project – part of the 7 th European Infrastructure Framework – dedicated to the study of strongly interacting matter. Local Responsible of the Work package 23, dedicated to the experimental study of the Generalized Parton Distributions (GPDex).
PRIN 2008	Local Coordinator (successor of Prof. C. Schaerf) for the Roma Tor Vergata Unit of the Project “The Nucleon Structure: transverse momentum, transverse spin and angular momentum” Principal Investigator Prof. ssa Anna Martin.
PRIN 2006	Member of the Project “Polarization observables measurements of baryon resonances photo-production”. Coordinator Prof. Carlo Schaerf.
PRIN 2004	Member of the Project “Polarization observables measurements of baryon resonances photo-production: search for five-quarks states”. Coordinator Prof. Carlo Schaerf.

Awards and Elective Charges:

2015 - present	Chair of the “CLAS Speaker Committee” at the Thomas Jefferson National Accelerator Facility, Virginia, USA (JLAB).
2014-present	Elected Full Member of the CLAS Collaboration.
2012-2014	Elected Member of the “User Group Board of Directors” at JLAB.
1998-2000	Elected “Co-chairperson” of the Gordon Research Conference on Photonuclear Reactions, Tilton (NE) USA July 30 th , August 4 th 2000.
1983 - 1986	ENPAS University student scholarship yearly awards.

Organization of International Congresses And Workshops

2015	“Chair” of “CLAS2015: CLAS12 4th European Workshop” – INFN Laboratori Nazionali del Sud e Sezione di Catania, Catania (ITALY) 17 - 20 February 2015. http://clas2015.roma2.infn.it/
2015	Co-Organizer of the LDMA2015 – 1 st International Workshop on Light Dark Matter @Accelerators – Camogli (Italy) June 24-26 2015.
2014	“Co-Chair” of “Exciting Baryons: design and analysis of Complete Experiments for Meson Photoproduction” – ECT* Trento (ITALY) June 30 – July 4 2014. http://portal.kph.uni-mainz.de/T//ECT_Baryons2014/
2013	“Chair” of MeNu2013 – 13th International Conference on Meson Nucleon Physics and the Structure of the Nucleon, Roma (ITALY) September 30 th - October 4 th 2013. http://menu2013.roma2.infn.it/

- 2012** "Convener" of the parallel session on " QCD, Baryon spectroscopy and exotics" at the "Eleventh Conference on the Intersections of Particle and Nuclear Physics (**CIPANP 2012**)" St. Petersburg, FL (USA) May 29 – June 3rd 2012.
<http://cipanp2012.triumf.ca/index.html>
- 2010** 'Chair' of the "Workshop on Photoreaction with Polarized Photons in Honor of Prof. Carlo Schaerf" Villa Mondragone (Frascati) May 3rd 2010.

International Advisory Committees Member

- PWA10/ATHOS5** The International Workshop on "Partial Wave Analyses and Advanced Tools for Hadron Spectroscopy", IHEP - Beijing (China). July 16 to 20, 2018.
- NSTAR 2017** The 11th International Workshop on the "Physics of Excited Nucleons ", University of South Carolina, Columbia, USA. August 20 – 23, 2017
- PWA9/ATHOS4** The International Workshop on "Partial Wave Analyses and Advanced Tools for Hadron Spectroscopy", Bad Honnef - Bonn (Germany). March 13 to 17, 2017.
- EINN 2015** 10th European Research Conference on "Electromagnetic Interactions with Nucleons and Nuclei", Cipro. November 1 – 7, 2015.
- NSTAR 2015** 10th International Workshop on the Physics of Excited Nucleons, Osaka, Japan. May 25-28, 2015.
- NSTAR2012** 9th International Workshop on the Physics of Excited Nucleons, Peniscola, Valencia, Spain. May 27-30 2012.
- MENU 2010** 12th International Conference on Meson-Nucleon Physics and the Structure of the Nucleon. College of William and Mary Williamsburg, Virginia USA. May 31-June 4th 2010.
- MENU 2004** 10th International Symposium on Meson-Nucleon Physics & the Structure of the Nucleon. Beijing, China. August 29th – September 4th 2004
- GDH 2002** 2nd International Symposium on the Gerasimov-Drell-Hearn sum rule and the spin structure of the Nuclei. Genova, July 3-6 2002.

Invited Speaker

Invited Speaker at about 40 National and International Conferences or Workshops reporting experimental results on Meson Photo-production experiments with polarized photons for the study of Baryon Resonances from the GRAAL, the LEGS and the CLAS collaborations.

TEACHING ACTIVITY

- 2019-present** "Vice-Coordinatore della Macroarea di Scienze" at the University of Roma Tor Vergata.
- 2015-present** "Coordinatore del Consiglio del Corso di Studi" of the Physics Department at the University of Roma Tor Vergata, since November 1 2015.

Undergraduate Teaching Courses

- 2012-2018** Physics Laboratory I/II for Physics Undergraduate Studies – 9/10 CFU
- 2011-2018** Nuclear Physics – Master Degree in Physics – 6CFU.
- 2009-2010** Physics of the Nucleus – Master Degree in Nuclear and Sub-Nuclear physics – 6CFU.

2009-2010	Physics Module for Biology - 7 CFU.
2007-2008	Physics for Ecology - 5 CFU.
2002-2009	Fundamentals of Nuclear and Sub-nuclear Physics for Physics studies – 6 CFU.
2001-2006	Physics for Evolutionistic Biology and Ecology - 6 CFU.

Exercise / Laboratory activity

1998 -2004	Laboratory activity for: Nuclear and Sub-Nuclear Physics
1998- 2000	Exercises: Physics I
1991- 1998	Laboratory activity for: Experimental Physics I/II

Phd Program

2005 - present	Member of the PhD Committee in Physics – Physics Department of the University of Roma “Tor Vergata”
2005 - present	Supervisor of about 10 PhD students in their research projects.
2014	Member of PhD International Committees in Belgium (Gent) and France (Paris).

II Level Master Courses Organization

2006-2009	Member of the Board of the II Level Master in "Physics and Technological Foundations of Hadro-therapy and Precision Radioteraphy"
2003-2005	Member of the Board of the II Level Master in "Nuclear Techniques for Industry, Environment and cultural Heritage".

Competences

Annalisa D'Angelo has devoted her research activity to the study of photo-nuclear reactions with polarized Compton backscattered photon beams at the LADON (Frascati) , LEGS (Brookhaven, USA) and GRAAL (Grenoble) facilities, with the aim of investigating the nucleon baryonic resonances, also using frozen spin polarized HD targets. Since 2009 she has continued the same activity as a member of the CLAS Collaboration (JLAB, USA), where the use of a polarized electron beam extended the research to the study of the internal structure of the nucleon through electron scattering reactions and nucleon-nucleon correlation in nuclei.

Since 2013 she is part of the HPS collaboration dedicated to the search of light dark matter at JLAB. In 2016 she also joined the EIC user group.

Detector and instrumentation construction activity:

2013	Coordinator of the LAAPD benchmarking for the Forward Tagging system of the CLAS12 detector, in collaboration with INFN Genova.
2010-2011	Contributed to the construction of the In-Beam Dilution Refrigerator for the frozen-spin polarized HD target for the CLAS apparatus.
2008-2009	Responsible of the design of a prototype for the KLOE2 tagging system
1996-2008	Responsible of the design, construction, installation, functioning, maintenance and calibration of the tagging system of the GRAAL polarized photon beam.
1998-2002	Responsible of design, construction, installation, functioning, maintenance and calibration of a neutron detector barrel for the LEGS-SPIN detector.
1994-2000	Responsible of the He ₃ /He ₄ /H ₂ /D ₂ cryogenic target for the LEGS experiments.

Curriculum Vitae ac Studiorum

Nazario Tantalo

- **personal information**

Name:	Nazario Tantalo
Date of Birth:	14-01-1978
Nationality:	Italian
Address:	Via Arezzo 30, 00161 Roma
Telephone:	+39 06 44245651
Mobile:	+39 347 0083158
e-mail:	nazario.tantalo@roma2.infn.it

SCIENTIFIC ACTIVITY

My research activity has been mostly focused on the study of the non-perturbative dynamics and phenomenology of strong interacting particles. I have also worked on Biological systems of medical relevance. In particular, I have given relevant contributions to:

- the study of the chiral regime of Quantum Chromo Dynamics (QCD) by performing, for the first time, numerical simulations of the two dynamical flavour formulation of the theory in physical volumes. These results have been obtained in collaboration with the CERN group.
- the understanding of the aggregation mechanism of amyloid fibrils, complex biological structures formed by some proteins. In collaboration with the ETH group, we have obtained important quantitative results for the protein $A\beta$ responsible for the neuro-degenerative Alzheimer's disease.
- the solution of the problem of the discretization of spatial momenta on a finite volume. Our group at Tor Vergata has proposed a method to solve this problem that is now widely used within the lattice community in order to obtain theoretical predictions of high phenomenological relevance.
- the non-perturbative study of heavy-flavour physics. In collaboration with the DESY group, we have developed efficient strategies to approach the difficult problem of b -physics on the lattice and obtained important results such as the theoretical calculation of the $B \mapsto D^{(*)} \ell \nu$ decay rates as a function of the momentum transfer.
- the study of electromagnetic (QED) corrections to hadronic processes. Recently, I have given fundamental contributions in this field.

In a collaboration among the three Universities of Rome, the RM123 collaboration, we have devised an efficient method to calculate QED radiative corrections to QCD processes. We have used this method to calculate the mass splitting of charged hadrons and, for the first time, the decay rates $K \mapsto \ell \nu(\gamma)$ and $\pi \mapsto \ell \nu(\gamma)$. These decay rates are crucial inputs for the extraction of the CKM matrix elements of the first row and QED radiative corrections must be taken into account to match the experimental precision.

In a collaboration with the CERN group, we have solved the long-standing problem of the definition of a charged state on a finite volume within the framework of local quantum field theory. On the basis of these theoretical results, I have recently founded a new international collaboration, the RC* collaboration. Within the RC* collaboration we have developed a state-of-the-art software package to perform QCD+QED simulations and made it publicly available to the scientific community (see <http://rcstar.web.cern.ch/>).

I have been awarded of a Scientific Associate fellowship from CERN and visited for short periods many institutions, e.g. DESY, ETH, ORSAY, and several Universities in Europe. I have been a member of organizing committees of workshops and international conferences, such as LATTICE2010, and referee for important journals, such as JHEP, Physics Letters B, Nuclear Physics B and Science. My scientific papers currently have more than 1950 citations with an h -index of 21 (Google Scholar).

I have been a member of the scientific board of the project “Problemi Interdisciplinari riconducibili a Simulazioni Numeriche su Larga Scala” of the “Museo Storico della Fisica e Centro Studi e Ricerche E. Fermi”. Within this project, led by Prof. R. Petronzio, I have directed a large computing center with several super-computers. Many research groups from international institutions have used these resources to perform state-of-the-art numerical simulations in research fields ranging from particle physics to biological and medical science. For example, the website Madgraph that allows to perform Monte Carlo calculations of hadronic cross-sections for LHC physics has been developed by the authors within this initiative and it has been running for five years on the E. Fermi PC clusters.

I’m a member of the LQCD123 INFN initiative and I have been a member of the APE collaboration and of the INFN committee for super-computing resources in theoretical physics. I have also been a member of the INFN committee for the Fubini prize.

The computational and theoretical physics group of Tor Vergata has recently obtained an Horizon2020 Grant for an European Joint Doctorate called STIMULATE. The institutions participating to the STIMULATE international training network are the Humboldt-Universitaet zu Berlin, the Bergische Universitaet of Wuppertal, the University of Cyprus, the Cyprus Institute, the University of Ferrara, the Rheinisch-Westfaelische Technische Hochschule of Aachen, the Hebrew University of Jerusalem and the University of Rome Tor Vergata. I’m a member of this project.

I’m the PI of the project PLNUGAMMA recently funded by the University fo Rome Tor Vergata to perform the first non-perturbative calculation of the QED radiative corrections real-photon-emission contributions to the leptonic decay rates of light and heavy-light pseudoscalar mesons.

POSITIONS

- → **Associate Professor in Theoretical Physics**
Abilitation for the position of Full Professor (2019–2025)
University of Rome Tor Vergata
Via O. Raimondi 18, 00173 Rome (Rome) Italy

- **October 2017** **Research Staff, Permanent**
University of Rome Tor Vergata
Via O. Raimondi 18, 00173 Rome (Rome) Italy
- **October 2017**
- **November 2010**

- March 2015
- March 2014

Scientific Associate
 CERN Physics Department
 1211 Geneva 23, Switzerland

- November 2010
- December 2007

Research Staff, Non-Permanent
 Istituto Nazionale di Fisica Nucleare I.N.F.N.
 Via E. Fermi 40, 00044 Frascati (Rome) Italy

- April 2007
- May 2005

Research Fellow
 Istituto Nazionale di Fisica Nucleare I.N.F.N.
 Via E. Fermi 40, 00044 Frascati (Rome) Italy

- November 2010
- March 2004

Scientific Collaborator
 Museo Storico della Fisica e Centro Ricerche “E. Fermi”
 Compendio Viminale, 00184 (Rome) Italy

- October 2001
- June 2001

Scientific Collaborator
 Università degli Studi di Roma “La Sapienza”
 Piazzale A. Moro 5, 00185 (Rome) Italy

TEACHING

- →
- 2019

Quantum Field Theory and Particle Physics
 University of Rome Tor Vergata
 course for undergraduate and Ph.D students

- →
- 2011

Complements: Relativistic Quantum Mechanics
 University of Rome Tor Vergata
 main course: *Relativistic Quantum Mechanics*, Prof. A. Salvio
 course for undergraduate students

- 2018
- 2016

Phenomenology of the Elementary Particles
 University of Rome Tor Vergata
 course for undergraduate and Ph.D students

- 2018
- 2017

Classical Field Theory
 University of Rome Tor Vergata
 course for undergraduate students

- 2018
- 2015

Complements: Quantum Field Theory and Particle Physics
 University of Rome Tor Vergata
 main course: *Quantum Field Theory and Particle Physics*, Prof. M. Bianchi
 course for undergraduate and Ph.D. students

- 2014
- 2011

Lattice Gauge Theories
 University of Rome Tor Vergata
 course for undergraduate and Ph.D. students

- 2012
- 2004

Complements: Quantum Field Theory and Particle Physics
 University of Rome Tor Vergata
 main course: *Quantum Field Theory and Particle Physics*, Prof. R. Petronzio
 course for undergraduate and Ph.D. students

- 2002

Complements: Classical Mechanics
 University of Rome Tor Vergata
 main course: *Classical Mechanics*, Prof. G.C. Rossi
 course for undergraduate students

EDUCATION

- 11-10-2005

Ph.D. in Physics
 University of Rome Tor Vergata
 Advisor: Prof. Roberto Petronzio

- 25-05-2001

Master Degree in Physics
 Università degli Studi di Roma "La Sapienza"
 Advisor: Prof. Nicola Cabibbo

CONFERENCES

Over the years I had to opportunity to give talks at several conferences and workshops. Here I list some of the invited and plenary talks:

- 2018

Talk: $|V_{us}/V_{ud}|$ from $K_{\mu 2}/K_{\pi 2}$.
 10th International Workshop on the CKM Unitarity Triangle (CKM 2018), Heidelberg, Germany.

- 2017

Organization of the International Symposium in honour of R. Petronzio.
 Monte Porzio Catone, Italy.

- [3] M. Guagnelli, R. Petronzio and N. Tantalo, “The Lattice scale at large beta in quenched QCD,” *Phys. Lett. B* **548** (2002) 58 [hep-lat/0209112].
- [4] G. M. de Divitiis, M. Guagnelli, R. Petronzio, N. Tantalo and F. Palombi, “Heavy quark masses in the continuum limit of quenched lattice QCD,” *Nucl. Phys. B* **675** (2003) 309 [hep-lat/0305018].
- [5] G. M. de Divitiis, M. Guagnelli, F. Palombi, R. Petronzio and N. Tantalo, “Heavy light decay constants in the continuum limit of quenched lattice QCD,” *Nucl. Phys. B* **672** (2003) 372 [hep-lat/0307005].
- [6] G. M. de Divitiis, R. Petronzio and N. Tantalo, “On the discretization of physical momenta in lattice QCD,” *Phys. Lett. B* **595** (2004) 408 [hep-lat/0405002].
- [7] L. Del Debbio, L. Giusti, M. Luscher, R. Petronzio and N. Tantalo, “Stability of lattice QCD simulations and the thermodynamic limit,” *JHEP* **0602** (2006) 011 [hep-lat/0512021].
- [8] U.F. Röhrig, A. Laio, N. Tantalo, M. Parrinello and R. Petronzio, “Stability and structure of oligomers of the Alzheimer peptide $A\beta_{16-22}$: from dimer to the 32-mer,” *BIOPHYSJ* **91**:3217 (2006)
- [9] L. Del Debbio, L. Giusti, M. Luscher, R. Petronzio and N. Tantalo, “QCD with light Wilson quarks on fine lattices (I): First experiences and physics results,” *JHEP* **0702** (2007) 056 [hep-lat/0610059].
- [10] L. Del Debbio, L. Giusti, M. Luscher, R. Petronzio and N. Tantalo, “QCD with light Wilson quarks on fine lattices. II. DD-HMC simulations and data analysis,” *JHEP* **0702** (2007) 082 [hep-lat/0701009].
- [11] G. M. de Divitiis, E. Molinaro, R. Petronzio and N. Tantalo, “Quenched lattice calculation of the $B \mapsto D\ell\nu$ decay rate,” *Phys. Lett. B* **655** (2007) 45 [arXiv:0707.0582 [hep-lat]].
- [12] G. M. de Divitiis, R. Petronzio and N. Tantalo, “Quenched lattice calculation of semileptonic heavy-light meson form factors,” *JHEP* **0710** (2007) 062 [arXiv:0707.0587 [hep-lat]].
- [13] D. Guazzini, R. Sommer and N. Tantalo, “Precision for B-meson matrix elements,” *JHEP* **0801** (2008) 076 [arXiv:0710.2229 [hep-lat]].
- [14] G. M. de Divitiis, R. Petronzio and N. Tantalo, “Quenched lattice calculation of the vector channel $B \mapsto D^*\ell\nu$ decay rate,” *Nucl. Phys. B* **807** (2009) 373 [arXiv:0807.2944 [hep-lat]].
- [15] M. Antonelli, D. M. Asner, D. A. Bauer, T. G. Becher, M. Beneke, A. J. Bevan, M. Blanke and C. Bloise *et al.*, “Flavor Physics in the Quark Sector,” *Phys. Rept.* **494** (2010) 197 [arXiv:0907.5386 [hep-ph]].
- [16] P. Fritzsch, J. Heitger and N. Tantalo, “Non-perturbative improvement of quark mass renormalization in two-flavour lattice QCD,” *JHEP* **1008** (2010) 074 [arXiv:1004.3978 [hep-lat]].
- [17] N. Tantalo, “Computer simulations of the theory of strong interactions,” *Nuovo Cim. C* **32N2** (2009) 267.
- [18] G. M. de Divitiis, R. Petronzio and N. Tantalo, “Distance preconditioning for lattice Dirac operators,” *Phys. Lett. B* **692** (2010) 157 [arXiv:1006.4028 [hep-lat]].
- [19] G. M. de Divitiis, P. Dimopoulos, R. Frezzotti, V. Lubicz, G. Martinelli, R. Petronzio, G. C. Rossi and F. Sanfilippo *et al.*, “Isospin breaking effects due to the up-down mass difference in Lattice QCD,” *JHEP* **1204** (2012) 124 [arXiv:1110.6294 [hep-lat]].
- [20] B. Blossier *et al.* [ALPHA Collaboration], “Parameters of Heavy Quark Effective Theory from $N_f=2$ lattice QCD,” *JHEP* **1209** (2012) 132 [arXiv:1203.6516 [hep-lat]].
- [21] G. M. de Divitiis, R. Petronzio and N. Tantalo, “On the extraction of zero momentum form factors on the lattice,” *Phys. Lett. B* **718** (2012) 589 [arXiv:1208.5914 [hep-lat]].
- [22] G. M. de Divitiis, R. Frezzotti, V. Lubicz, G. Martinelli, R. Petronzio, G. C. Rossi, F. Sanfilippo and S. Simula *et al.*, “Leading isospin breaking effects on the lattice,” *Phys. Rev. D* **87** (2013) 114505 [arXiv:1303.4896 [hep-lat]].
- [23] A. Esposito, M. Papinutto, A. Pilloni, A. D. Polosa and N. Tantalo, “Doubly Charmed Tetraquarks in B_c and Ξ_{bc} Decays,” *Phys. Rev. D* **88** (2013) 054029 [arXiv:1307.2873 [hep-ph]].

- [24] N. Carrasco, V. Lubicz, G. Martinelli, C. T. Sachrajda, N. Tantalo, C. Tarantino and M. Testa, “QED Corrections to Hadronic Processes in Lattice QCD,” *Phys. Rev. D* **91** (2015) no.7, 074506 doi:10.1103/PhysRevD.91.074506 [arXiv:1502.00257 [hep-lat]].
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- [26] B. Lucini, A. Patella, A. Ramos and N. Tantalo, “Charged hadrons in local finite-volume QED+QCD with C^* boundary conditions,” *JHEP* **1602** (2016) 076 doi:10.1007/JHEP02(2016)076 [arXiv:1509.01636 [hep-th]].
- [27] V. Lubicz, G. Martinelli, C. T. Sachrajda, F. Sanfilippo, S. Simula and N. Tantalo, “Finite-Volume QED Corrections to Decay Amplitudes in Lattice QCD,” *Phys. Rev. D* **95** (2017) no.3, 034504 doi:10.1103/PhysRevD.95.034504 [arXiv:1611.08497 [hep-lat]].
- [28] D. Giusti, V. Lubicz, G. Martinelli, S. Sanfilippo, S. Simula, N. Tantalo and C. Tarantino, “Leading isospin-breaking corrections to pion, kaon and charmed-meson masses with Twisted-Mass fermions,” *Phys. Rev. D* **95** (2017) no.11, 114504 doi:10.1103/PhysRevD.95.114504 [arXiv:1704.06561 [hep-lat]].
- [29] D. Giusti, V. Lubicz, G. Martinelli, C. T. Sachrajda, F. Sanfilippo, S. Simula, N. Tantalo and C. Tarantino, *Phys. Rev. Lett.* **120** (2018) no.7, 072001 doi:10.1103/PhysRevLett.120.072001 [arXiv:1711.06537 [hep-lat]].
- [30] M. Hansen, B. Lucini, A. Patella and N. Tantalo, *JHEP* **1805** (2018) 146 doi:10.1007/JHEP05(2018)146 [arXiv:1802.05474 [hep-lat]].
- [31] M. Hansen, A. Lupo and N. Tantalo, “On the extraction of spectral densities from lattice correlators,” arXiv:1903.06476 [hep-lat]. Accepted for publication on *Phys. Rev. D*.

CONFERENCE PROCEEDINGS

- [32] L. Giusti, M. L. Paciello, S. Petrarca, B. Taglienti and N. Tantalo, “Quark and gluon propagators in covariant gauges,” *Nucl. Phys. Proc. Suppl.* **106** (2002) 995 [hep-lat/0110040].
- [33] L. Giusti, S. Petrarca, B. Taglienti and N. Tantalo, “Numerical exploration of the RI / MOM scheme gauge dependence,” *Nucl. Phys. Proc. Suppl.* **119** (2003) 962 [hep-lat/0209102].
- [34] M. Guagnelli, F. Palombi, R. Petronzio and N. Tantalo, “ $f(B)$ from finite size effects in lattice QCD,” *Nucl. Phys. Proc. Suppl.* **119** (2003) 616 [hep-lat/0209113].
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Informazioni personali

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Maschio

Esperienza Lavorativa

Date
Lavoro o posizioni ricoperte
Principali attività e responsabilità

Marzo 2010 - Oggi
Tecnologo III Livello

Settembre 2013 - Oggi

Project Manager Progetto Limadou, finanziato dall'Agenzia Spaziale Italiana (ASI) nell'ambito della missione satellitare cinese CSES (Chinese Seismo-Electromagnetic Satellite) con gli accordi "Progetto premiale Limadou fase B/C/D1" (2014), "Progetto premiale Limadou fase D2" (2015), "Addendum n. 1 Progetto premiale Limadou fase B/C/D1" (2015), "Progetto Limadou Scienza" (2016) e Progetto Limadou Fase E/Operazioni" (2017) con responsabilità di:

- Organizzazione, management e controllo del progetto con particolare riguardo alle attività di design, sviluppo, realizzazione, test ed operazioni di volo del rivelatore High Energy Particle Detector (HEPD) e dell'Engineering Model del rivelatore Electric Field Detector (EFD)
- Gestione Product & Quality Assurance e Safety del progetto (controllo configurazione, controllo materiali e processi, test procedure e report, gestione non-conformità, ...) con particolare riguardo alle attività di sviluppo, Assembly, Integration & Testing (AIT), commissioning ed operazioni in volo del rivelatore HEPD
- Supporto alla gestione delle attività di ingegneria
- Gestione tecnica delle relazioni con i responsabili cinesi del satellite CSES con particolare riguardo alle attività integrazione e test del rivelatore HEPD a bordo di CSES
- Gestione e controllo delle attività amministrative legate al progetto con particolare riguardo alle acquisizioni in qualità di Responsabile Unico Procedimento (RUP), Punto Istruttore (PI) MEPA e responsabile collaudi

Aprile 2012-Agosto 2013

Nell'ambito del programma JEM-EUSO (Extreme Universe Space Observatory) per la realizzazione di una missione spaziale per la ricerca scientifica sui raggi cosmici di più alta energia, responsabile del team di sviluppo del software di data-handling della CPU di due esperimenti pathfinder del programma:

- EUSO-Balloon, volo su pallone stratosferico finanziato dall'agenzia spaziale francese (CNES), che ha volato il 25 Agosto 2014 dalla base di Timmins (Canada);
- EUSO-TA, in funzione dal Febbraio 2015 presso il Telescope Array (TA) nel deserto dello Utah (USA).

Ottobre 2011-Dicembre 2012

Nell'ambito del progetto SuperB, collisore elettroni-postroni ad alta luminosità, responsabile del design e dello sviluppo del database di book-keeping dell'esperimento e di alcuni moduli del sistema di produzione di distributed computing.

Marzo 2010-Oggi

Responsabile, nell'ambito dell'esperimento su satellite PAMELA (Payload for Antimatter Matter Exploration and Light-nuclei Astrophysics), di:

- operazioni di download dati PAMELA presso JSC-RSS (Mosca, Russia) per la collaborazione internazionale PAMELA e loro trasferimento presso INFN-CNAF
- pianificazione e gestione costi attività contratto ASI-INFN "PAMELA: attività scientifiche di analisi dati e calibrazione dello strumento"
- analisi dati della componente di boro e carbonio esperimento PAMELA

Esercitatore del corso di *Laboratorio di Informatica* del Corso di Laurea in Scienza dei Materiali, Facoltà di Scienze Matematiche Fisiche e Naturali

Nome ed indirizzo datore di lavoro
Tipo di attività o settore

Istituto Nazionale di Fisica Nucleare – Via Enrico Fermi, 40 – 00040 Frascati (RM) - Italia
Ricerca scientifica

Date	Maggio 2009 - Febbraio 2010
Lavoro o posizioni ricoperte	Collaboratore (ex art. 2222)
Principali attività e responsabilità	Responsabile, nell'ambito dell'esperimento su satellite PAMELA (Payload for Antimatter Matter Exploration and Light-nuclei Astrophysics), di: <ul style="list-style-type: none"> • sviluppo di algoritmi ed applicativi C/C++ per l'analisi dei dati con particolare riguardo all'ottimizzazione dell'algoritmo di tracciamento dei nuclei leggeri • analisi dati della componente dei nuclei leggeri esperimento PAMELA • amministrazione ed ottimizzazione di un cluster di calcolo distribuito, scalabile e ad alta disponibilità ottimizzato per il software analisi PAMELA presso l'INFN Sezione di Roma Tor Vergata
Nome ed indirizzo datore di lavoro	Esercitatore del corso di <i>Laboratorio di Informatica</i> del Corso di Laurea in Scienza dei Materiali, Facoltà di Scienze Matematiche Fisiche e Naturali
Tipo di attività o settore	Istituto Nazionale di Fisica Nucleare – Via Enrico Fermi, 40 – 00040 Frascati (RM) - Italia Ricerca scientifica
Date	Aprile 2008 - Aprile 2009
Lavoro o posizioni ricoperte	Assegnista di ricerca
Principali attività e responsabilità	Responsabile, nell'ambito dell'esperimento su satellite PAMELA (Payload for Antimatter Matter Exploration and Light-nuclei Astrophysics), di: <ul style="list-style-type: none"> • sviluppo di algoritmi ed applicativi C/C++ per l'analisi dei dati dell'esperimento su satellite PAMELA con particolare riguardo all'ottimizzazione dell'algoritmo di tracciamento dei nuclei leggeri • analisi dati esperimento PAMELA con particolare riguardo alla componente dei nuclei leggeri • progettazione, messa in opera ed amministrazione di un cluster di calcolo distribuito, scalabile e ad alta disponibilità ottimizzato per il software analisi PAMELA presso l'INFN Sezione di Roma Tor Vergata
Nome ed indirizzo datore di lavoro	Responsabile, nell'ambito dell'esperimento ALTEA (Anomalous Long Term Effects on Astronauts) sulla Stazione Spaziale Internazionale, di:
Tipo di attività o settore	• sviluppo di algoritmi ed applicativi tramite uso di database e applicativi C/C++ per l'analisi dei dati ALTEA Esercitatore del corso di <i>Laboratorio di Informatica</i> del Corso di Laurea in Scienza dei Materiali, Facoltà di Scienze Matematiche Fisiche e Naturali Università degli Studi di Roma Tor Vergata - Via Orazio Raimondo, 18 - 00173 Roma - Italia Ricerca scientifica
Date	Maggio 2005 – Marzo 2008
Lavoro o posizioni ricoperte	Collaboratore (ex art. 2222)
Principali attività e responsabilità	Responsabile design, sviluppo e test degli applicativi della pipeline per l'analisi dei dati dalla Large Binocular Camera (LBC) del Large Binocular Telescope (LBT) con particolare riguardo per: <ul style="list-style-type: none"> • calibrazione della camera e messa a fuoco del telescopio; • gestione dati tramite database e pre-riduzione; • riduzione ed analisi dati
Nome ed indirizzo datore di lavoro	Istituto Nazionale di Astrofisica - Viale del Parco Mellini, 84 - 00136 Roma - Italia
Tipo di attività o settore	Ricerca scientifica
Date	Luglio 2002 - Aprile 2005
Lavoro o posizioni ricoperte	Assegnista di ricerca
Principali attività e responsabilità	Responsabile design, sviluppo e test di algoritmi e applicativi per: <ul style="list-style-type: none"> • riduzione dati dalla Large Binocular Camera (LBC) del Large Binocular Telescope (LBT); • analisi di immagini multi-banda utilizzabili per dati prodotti sia da telescopi a terra che spaziali; • analisi di immagini profonde multi-banda tramite uso di database e lo sviluppo di un'interfaccia web integrata.
Nome ed indirizzo datore di lavoro	Istituto Nazionale di Astrofisica - Viale del Parco Mellini, 84 - 00136 Roma - Italia
Tipo di attività o settore	Ricerca scientifica
Date	Dicembre 2001 - Giugno 2002
Lavoro o posizioni ricoperte	Collaboratore
Principali attività e responsabilità	Project engineer per design, sviluppo e test di applicativi di simulazione della Large Binocular Camera (LBC) del Large Binocular Telescope (LBT) per: <ul style="list-style-type: none"> • creazione di immagini astronomiche artificiali, • simulazione di immagini ottenute in differenti condizioni osservative, • simulazione di immagine ottenute dagli strumenti ottici del LBC.

Nome ed indirizzo datore di lavoro
Tipo di attività o settore
Faraday s.r.l. Unipersonale – Via Ugo Pesci, 20 – 00159 Roma - Italia
Information technology

Date
Settembre 2001 - Dicembre 2001

Lavoro o posizioni ricoperte
Collaboratore

Principali attività e responsabilità
Sviluppo di programmi per l'automatizzazione della pipeline per l'analisi e la riduzione di immagini del Very Large Telescope (VLT)

Nome ed indirizzo datore di lavoro
Tipo di attività o settore
Osservatorio Astronomico di Roma – Via Frascati, 33 – 00078 Monte Porzio Catone (RM) - Italia
Ricerca scientifica

Educazione e formazione

Date
2009-2014

Titolo o qualifica conseguita
Dottorato di Ricerca in Fisica

Principali tematiche/competenze professionali acquisite
Fisica nucleare e sub-nucleare, fisica dei raggi cosmici, sviluppo algoritmi e software, calcolo numerico, analisi dati, analisi statistica.
Tesi di dottorato: "PAMELA measurements of boron and carbon spectra and B/C ratio in the energy range 0.44 GeV/n - 129 GeV/n"

Nome e tipo d'organizzazione erogatrice dell'istruzione e formazione
Università degli Studi di Roma Tor Vergata - Via Orazio Raimondo, 18 - 00173 Roma - Italia

Date
1992-2001

Titolo o qualifica conseguita
Laurea in Fisica

Principali tematiche/competenze professionali acquisite
Fisica teorica, meccanica statistica, modellazione sistemi disordinati, sviluppo algoritmi e software, calcolo numerico.
Tesi di laurea: "Classi di universalità in modelli statistici con disordine in 3 dimensioni".

Nome e tipo d'organizzazione erogatrice dell'istruzione e formazione
Università degli Studi di Roma Tor Vergata - Via Orazio Raimondo, 18 - 00173 Roma - Italia

Date
Gennaio 2007 – Maggio 2007

Titolo o qualifica conseguita
Attestato partecipazione corso "PM-CORE, fondamenti di Project Management per progetti ad alta innovazione"

Principali tematiche/competenze professionali acquisite
Fondamenti di project management con particolare riguardo allo standard ECSS (European Cooperation for Space Standardization): project planning, project phasing, Work Breakdown Structure, risk assessment, information and documentation management, cost schedule.

Nome e tipo d'organizzazione erogatrice dell'istruzione e formazione
Project Management Lab – Via Paganini, 15 – 20131 Milano - Italia

Competenze personali

Prima Lingua
Italiano

Altre lingue

Inglese

Comprensione		Espressione	
Ascolto	Lettura	Interazione	Produzione orale
B2	B2	B2	B2

Capacità e competenze sociali
Capacità di lavorare in gruppo e di relazionare figure di vario livello gerarchico.
Forte capacità di problem solving

Capacità e competenze organizzative
Ottima competenza ed esperienza come project manager secondo gli standard ECSS.
Forti capacità organizzative nell'ambito delle attività di coordinamento di team per la realizzazione di payload spaziali a scopo scientifico.

Capacità e competenze tecniche	<p>Realizzazione payload spaziali a scopo scientifico Forte competenza ed esperienza nella realizzazione, assemblaggio, integrazione e test di payload spaziali a scopo scientifico.</p> <p>Standard progetti spaziali</p> <ul style="list-style-type: none"> • Ottima conoscenza degli standard ECSS (European Cooperation for Space Standardization) con particolare riguardo agli aspetti di management (serie M). • Buona conoscenza degli standard ECSS (European Cooperation for Space Standardization) con particolare riguardo agli aspetti di ingegneria (serie E) e <i>product and quality assurance</i> (serie Q). <p>Algoritmi e metodi numerici Ottima competenza e conoscenza in:</p> <ul style="list-style-type: none"> • Monte Carlo: algoritmi Metropolis, catene di Markov, parallel tempering, algoritmi di vettorizzazione, multi-spin, algoritmi genetici, simulated annealing; • Image Processing: tecniche di analisi e trasformazione di immagini digitali: noise reduction, noise removal, shape analysis, edge detection, peak detection, resampling, template matching, pattern recognition, FFT, wavelet analysis; • Metodi numerici: metodi di analisi numerica: soluzione di equazione algebriche lineari, interpolazione ed estrapolazione, integrazione e stima di funzioni, generatori random, sorting, minimizzazione e massimizzazione di funzioni, fitting di funzioni e distribuzioni, wavelet transform;
Capacità e competenze informatiche	<p>Sistemista in ambiente Linux Configurazione e installazione di sistemi hardware e software con particolare riguardo ai sistemi di calcolo distribuito, database server e server web.</p> <p>Sviluppo e amministrazione di database</p> <ul style="list-style-type: none"> • creazione del modello dei dati e progettazione del database; • sviluppo database su piattaforma PostgreSQL e MySQL; <p>Gestione server</p> <ul style="list-style-type: none"> • gestione server web (apache), MySQL, PostgreSQL; • conoscenza degli strumenti per gestione (es. SSH, Telnet, FTP, SCP) e assistenza remota (es. RDP, VNC) • installazione e gestione Network Attached Storage (NAS) e Storage Area network (SAN) <p>Web design e gestione dei contenuti Design con Javascript, Ajax, CSS, HTML, DHTML. Creazione layout web secondo standard.</p> <p>Linguaggi di programmazione Ottima conoscenza C, C++, Python, Perl, PHP / PHP3, SQL, (X)HTML, JavaScript, Ajax (jQuery), CSS, Unix shell scripting</p> <p>Project management software Ottima conoscenza di Microsoft Project e ECOS (ESA Costing Software)</p> <p>Applicazioni informatiche per l'ufficio Microsoft Office, Open Office</p> <p>Sistemi operativi</p> <ul style="list-style-type: none"> • ottima conoscenza Linux (Debian, Ubuntu, RedHat); • utente Windows
Patente	B
<p>Ulteriori informazioni Pubblicazioni</p>	Circa 80 pubblicazioni su riviste internazionali con referee e oltre 100 pubblicazioni tra pubblicazioni su riviste scientifiche senza referee e contributi a congressi (come da liste allegate)

Partecipazioni a congressi

1. Seminario Thales Alenia Space Italia

CSES Limadou A Chinese-Italian Space Mission

Thales Alenia Space Italia, Roma, 13 Marzo 2017

2. Workshop “Progetti di ricerca e sviluppo per strumentazione di space science”

Limadou CSES Mission

ASI HQ, Roma, 5-6 Dicembre 2016

3. Workshop “Future Missioni e Payload di Osservazione della Terra in studio presso la Comunità Scientifica Italiana”

High Energy Particle Detector su CSES-2

ASI HQ, Roma, 29 Novembre 2016

4. CSES-Limadou Mission Workshop

HEPD Instrument (talk)

ASI HQ, Roma, 23 Marzo 2016

5. Primo Workshop Nazionale su: "Le Tecnologie Nazionali per mini e micro satelliti: Idee, Progetti e Prospettive

Space weather missions on micro or mini satellites (talk)

CIRA, Capua (CE), 22 Luglio 2015

6. 1st CSES Workshop

High Energy Particle Detector for the CSES experiment (talk)

Pechino (Cina), 14-16 Novembre 2014

7. ICRC 2011

Latitudinal and radial gradients of galactic cosmic ray protons in the inner heliosphere PAMELA and Ulysses observations (talk)

PAMELA measurements of boron and carbon spectra in the energy range 100MeV/n – 100GeV/n (poster)

Pechino (Cina), 11-18 Agosto 2011

8. COSPAR 2010

Measurement of the light nuclei component with the PAMELA experiment (poster)

Brema (Germania), 18-25 Luglio 2010

9. 1st IAA Planetary Defense Conference

A new debris detection algorithm for orbiting solar telescopes (poster)

Granada (Spagna), 27-30 Aprile, 2009

10. SPIE 2004

The Large Binocular Camera image simulator: predicting the performances of LBC (poster)

Glasgow (Regno Unito), 21-25 Giugno, 2004

Riconoscimenti e premi

Premio ARAP (Associazione Romana AstroParticelle) 2014 per la tesi di dottorato: "PAMELA measurements of boron and carbon spectra and B/C ratio in the energy range 0.44 GeV/n - 129 GeV/n"

Allegati

1. Lista pubblicazioni su riviste scientifiche con referee
2. Lista pubblicazioni su riviste scientifiche senza referee e contributi a congressi

PUBBLICAZIONI SU RIVISTE SCIENTIFICHE CON REFEREE

- [1] **Ambrosi, G., et al.** *The HEPD particle detector of the CSES satellite mission for investigating seismo-associated perturbations of the Van Allen belts.* SCIENCE CHINA-TECHNOLOGICAL SCIENCES, 61(5):643–652 (2018). ISSN 1674-7321. doi:10.1007/s11431-018-9234-9.
- [2] **Badoni, D., et al.** *A high-performance electric field detector for space missions.* Planet. Space Sci., 153:107–119 (2018). doi:10.1016/j.pss.2018.01.013.
- [3] **Martucci, M., et al.** *Proton Fluxes Measured by the PAMELA Experiment from the Minimum to the Maximum Solar Activity for Solar Cycle 24.* ApJ, 854:L2 (2018). doi:10.3847/2041-8213/aaa9b2.
- [4] **Munini, R., et al.** *Evidence of Energy and Charge Sign Dependence of the Recovery Time for the 2006 December Forbush Event Measured by the PAMELA Experiment.* ApJ, 853:76 (2018). doi:10.3847/1538-4357/aaa0c8.
- [5] **Adriani, O., et al.** *Unexpected Cyclic Behavior in Cosmic-Ray Protons Observed by PAMELA at 1 au.* ApJ, 852:L28 (2018). doi:10.3847/2041-8213/aaa403.
- [6] **Abdellaoui, G., et al.** *Cosmic ray oriented performance studies for the JEM-EUSO first level trigger.* Nuclear Instruments and Methods in Physics Research A, 866:150–163 (2017). doi:10.1016/j.nima.2017.05.043.
- [7] **Bruno, A., et al.** *Geomagnetically trapped, albedo and solar energetic particles: Trajectory analysis and flux reconstruction with PAMELA.* ADVANCES IN SPACE RESEARCH, 60(4):788–795 (2017). ISSN 0273-1177. doi:10.1016/j.asr.2016.06.042.
- [8] **Adriani, O., et al.** *Time Dependence of the Electron and Positron Components of the Cosmic Radiation Measured by the PAMELA Experiment between July 2006 and December 2015.* PHYSICAL REVIEW LETTERS, 116(24) (2016). ISSN 0031-9007. doi:10.1103/PhysRevLett.116.241105.
- [9] **Adriani, O., et al.** *PAMELA’s measurements of geomagnetic cutoff variations during the 14 December 2006 storm.* SPACE WEATHER-THE INTERNATIONAL JOURNAL OF RESEARCH AND APPLICATIONS, 14(3):210–220 (2016). ISSN 1542-7390. doi:10.1002/2016SW001364.
- [10] **Adriani, O., et al.** *MEASUREMENTS OF COSMIC-RAY HYDROGEN AND HELIUM ISOTOPES WITH THE PAMELA EXPERIMENT.* ASTROPHYSICAL JOURNAL, 818(1) (2016). ISSN 0004-637X. doi:10.3847/0004-637X/818/1/68.
- [11] **Adams, J. H., et al.** *Ground-based tests of JEM-EUSO components at the Telescope Array site, “EUSO-TA”.* Experimental Astronomy, 40:301–314 (2015). doi:10.1007/s10686-015-9441-6.
- [12] **Adams, J. H., et al.** *JEM-EUSO: Meteor and nuclearite observations.* Experimental Astronomy, 40:253–279 (2015). doi:10.1007/s10686-014-9375-4.
- [13] **Adams, J. H., et al.** *Ultra high energy photons and neutrinos with JEM-EUSO.* Experimental Astronomy, 40:215–233 (2015). doi:10.1007/s10686-013-9353-2.
- [14] **Adams, J. H., et al.** *Performances of JEM-EUSO: angular reconstruction.* The JEM-EUSO Collaboration. Experimental Astronomy, 40:153–177 (2015). doi:10.1007/s10686-013-9371-0.
- [15] **Adams, J. H., et al.** *JEM-EUSO observational technique and exposure.* Experimental Astronomy, 40:117–134 (2015). doi:10.1007/s10686-014-9376-3.
- [16] **Adams, J. H., et al.** *The JEM-EUSO instrument.* Experimental Astronomy, 40:19–44 (2015). doi:10.1007/s10686-014-9418-x.
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