

Prof. Dott. Andrea Santangelo

Curriculum Vitae et Studiorum

Tübingen, April 5, 2022

Introduction: key elements of the CV

With this brief introduction I wish to sketch the main aspects of my career in space science, astronomy, astrophysics, and astroparticle physics. Detailed information on the positions, activities, roles and services of my career are summarized in the sections following this introduction.

I studied physics and astrophysics at the University of Palermo (with Prof. Saverio Persico), at the *Istituto of Fisica Cosmica con Applicazioni dell'Informatica* (IFCAI) of the *Consiglio Nazionale delle Ricerche* (CNR, with Prof. Livio Scarsi, and Dr. Giuseppe Manzo), and at the Columbia Astrophysics Laboratory of the Columbia University in New York (with Prof. Robert Novick).

Space Science.

I consider myself mainly a 'high energy' astrophysicist. In 1993 I started to work in astrophysics and space science as researcher of the IFCAI, CNR, which later merged into the Italian IASF-*Istituto Nazionale di Astrofisica Spaziale*. I became a member of the *Istituto Nazionale di Astrofisica* (INAF), when the CNR space institutes were merged into the new Institution. From 2000 to 2004 I was adjunct Professor for experimental physics at the Faculty of Engineering of the *Università degli Studi* di Palermo.

In September 2004, I was appointed to the Chair of "*experimentelle weltraumgestützte Hochenergieastrophysik*" at the Eberhard-Karls Universität Tübingen, in Germany. (For details <https://uni-tuebingen.de/en/90013>).

I have served as Director and vice-Director of the Institute of Astronomy and Astrophysics, as chairman and vice-chairman of the Department of Physics of the Faculty of Science. I founded the *Hochenergieastrophysik Abteilung* of the Institute of Astronomy and Astrophysics Tübingen (IAAT) of the University of Tübingen and co-founded the Kepler Center for Astro and Particle Physics at the same University. I have also co-founded the International Master course in Astro and Particle Physics at the University of Tübingen. I have supervised and still have the pleasure of supervising more than 100 *Habilitation*, PHD, *Diploma*, Master, Bachelor and *Laurea* thesis. In my academic career I have served on many Faculty and University committees, as well as PHD committees mainly in Italy and Germany, but also in other Institutions in Europe.

Other key positions of my career include a long-lasting collaboration with the Japanese RIKEN institute, as visiting scientist and research consultant (mostly on JEM-EUSO and MAXI), and more recently with the Institute of High Energy Physics (IHEP) of the Chinese Academy of Sciences (CAS) in Beijing.

I started my professional life in the early 90s working on X-ray polarimetry at Columbia with Robert Novick. Since then, I have matured a wide experience in space based astrophysics, and space instrumentation and technology through the participation to various international space missions, and experimental developments.

Since 1993, I participated to the *BeppoSAX* Italian-Dutch mission as Deputy-Principal Investigator (PI) and, after launch, PI of one of the instruments, the HPGSPC. I have been also Co-Investigator (Co-I, often indicates the coordinating role in a country) of the ESA's *INTEGRAL* and *XMM-Newton* missions.

I am participating as Co-I to ESA's L2 mission *ATHENA* (on the WFI), and to the German *eRosita* telescope onboard the Spectrum X-Gamma mission. I am and have been Co-I of the M-class mission studies for ESA's M5 *THESEUS*, M4 *XIPE* and M3 *LOFT*, M5 *THESEUS*, and I have acted as German PI of the *Simbol-X* mission study. Recently I have started an intense

collaboration on the *extended X-ray Timing and Polarimeter* (eXTP) mission led by the Institute of High Energy Physics, of the Chinese Academy of Sciences and developed by a Sino-European scientific Consortium, and currently in its phase B1/C1 study. I serve as International Coordinator of the eXTP mission. I serve as International Coordinator of the mission, with key liaison responsibilities between the Chinese and the European Consortium teams, and Chairman of the team coordinating the Science Activities of the whole Consortium.

Under my leadership, the *IAAT Abteilung* has participated or participates to several experimental activities at proton facilities (to test mirror elements and detectors) and particle facilities (to test impact of debris). We are part of the AHEAD and HERMES EU grants, and of ESA's supported EXACRAD initiative.

In the field of space-based astroparticle, building on the heritage of Livio Scarsi and John Linsley, I had the possibility to pioneer studies for the *space-based observation of the Ultra High Energy Universe* through the developments of several mission studies like the ones for the ESA's *Extreme Universe Space Observatory* (EUSO, of which I was deputy PI), and for its version on the Japanese JEM module of the ISS, as well as for the Super-EUSO mission concept (of which I was the PI). Until end of 2017, I served as Global coordinator of the JEM-EUSO collaboration, before stepping down to focus on eXTP. In the context of the JEM-EUSO framework, I have participated to the realization of a variety of pathfinder prototypes, such as the EUSO-balloon mission (led by CNES), the EUSO-Super Pressure Balloon (led by NASA), the development for the TA-EUSO ground based pathfinder, and the Mini-EUSO mission onboard the ISS.

Ground-Based Observatories.

I also believe that we have to keep our feet on-ground. In the last 15 years, astrophysics has evolved toward a multi-wavelength and multi-messenger approach to the observation of the Universe. Therefore, in the last ten years I decided with my group to join the experimental developments of ground-based astro-particle physics observatories and in particular of TeV astrophysics. The group I lead is now very active in the field through the participation to the H.E.S.S. very high-energy gamma observatory and to the Cherenkov Telescope Array (CTA). I serve in the Collaboration boards of both H.E.S.S. and CTA.

Observational and modelling Activities.

Beside the experimental developments for flight and ground-based hardware, a second key aspect of my career has been in observational analysis and modelling. In my past and present group, we have been working on the astrophysics of galactic compact objects (neutron stars and black holes), SNRs and X-ray population studies, TeV emitters such as Pulsar Wind Nebulae, SNRs, TeV Binaries, and indirect dark matter search. In this context I have served in the scientific and organization committees of many conferences and workshop. In addition, thanks to the JEM-EUSO, and H.E.S.S. and CTA studies I have gained experience on the physics and astrophysics of Cosmic Rays, as well as on problems related to phenomena in the atmosphere (from meteors to IR monitoring, and events like elves, sprites etc...).

Thanks to the participation to the experimental and scientific developments of several space science enterprises, and as a member of many science committees, I have gained a wide expertise in the scientific, technological, financial and programmatic aspects of scientific enterprises and of the industrial dynamics in space science. Through seeking the support for my research, and as reviewer for quite a number of international funding agencies, I have in addition gained a wide expertise in the financial and programmatic dynamics of the research structures, in Italy, in Germany and in Europe in general, including the dynamics of ESA, NASA and JAXA. More recently I have gained experience on the rather complex dynamics of space activities in China.

I have served on the ESA's Astronomy Working Group of the Directorate of Science from January 2015 to December 2018. I have also served on the ESA's Science Advisory Team for Research Opportunities on the *Deep Space Gateway*, and on the "Science Assessment Review Panel for the new ideas" (SARP). I have served as PI of the topical Team of the ELIPS program on JEM-EUSO of ESA's Human Spaceflight and Operations Directorate (currently Human Spaceflight and Robotic Exploration Directorate). I have served on ESA's LOFT Science Study team, XIPE Science Study team and the THESEUS Science Study Team. I have been appointed as International Expert for Research Planning in the Field of Space Astronomy of Mega Science Projects of China's State Council, and as International Review Expert of the China Manned Space Program in Space Utilization of the Technology and Engineering Center for Space Utilization (CSU) of the Chinese Academy of Sciences.

It is thanks to the above-mentioned aspects of my career that -I dare to say- I have developed a world-wide net of interpersonal relationships (and friendships) in the international space science, astronomy and astroparticle physics community.

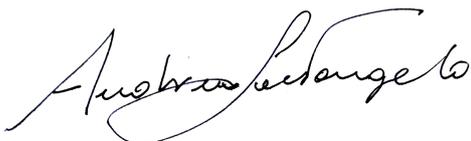
I am first or co-author of more than 500 publications on refereed journals or key refereed proceedings, and of about 300 non-refereed contributions, in the following fields of research: Experimental developments for X-ray Astrophysics (Instruments, missions, space qualification simulations); Experimental developments for TeV Astrophysics; space based studies of UHE particles; Accreting Pulsars and isolated neutron stars; Low Mass X-ray Binaries; Black Holes; TeV sources; UV observation of the Earth; Indirect Dark Matter search.

I have given more than 100 invited lectures, seminars and talk, and many public outreach talks.

Due to the events of my career, I have the fortune to speak Italian (mother tongue), fluent English, and fluent German. I can in addition read and understand French and Spanish.

**For a complete list of publication please visit my OrcID link at:
<https://orcid.org/0000-0003-4187-9560>**

Tübingen, April 5, 2022

A handwritten signature in black ink, reading "Andrea Santangelo". The signature is written in a cursive style with a large, sweeping initial 'A'.

1.0 General Information

1.1 Personal Information

Name	Andrea Santangelo
Place and date of birth:	Palermo, Italy, August 4, 1962
Citizenships	Italian, German
Marital status	Married with Rosalia Madonia Children: Vincenzo, Thea, Claudia, Giulia, Manfredi
Private address	Im Winkelrain 64, 72076, Tübingen, Germany
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1.2 Professional Positions

September 2004 - today **Full Professor für “experimentelle Hochenergie-Astrophysik”** at the *Eberhard-Karls Universität* Tübingen, Germany.

November 2015 – December 2021 **Visiting Full Professor**, Institute of High Energy Physics of the Chinese Academy of Science, Beijing, China.

Twice winner of the **CAS President’s International Fellowship in 2016 and 2021**.

April 2010 - 2017 **Visiting Scientist and Research Consultant** at the Computational Astrophysics Laboratory, RIKEN, Japan.

October 2018 – November 2020 **Department Speaker (Chairman)** of the *Physics Department, Faculty of Science*, of the *Eberhard-Karls Universität* Tübingen.

October 2016 – October 2018, and June 2008 – July 2010 **Director of the *Institut für Astronomie und Astrophysik***, Kepler Center for Astro and Particle Physics of the *Eberhard-Karls Universität* Tübingen.

July 2015 – September 2018, and October 2010 – October 2012 **Vice Department Speaker** of the Physics Department of the Faculty of Science of the *Eberhard-Karls Universität* Tübingen, Germany.

April 2011 - today **founding Director (Leiter)** of the *Hochenergieastrophysik Abteilung* at the *Institut für Astronomie und Astrophysik* of the *Eberhard-Karls Universität* Tübingen.

June 2010 – 2012 and June 2014 – October 2016 **Vice-Director of the *Institut für Astronomie und Astrophysik***, Kepler Center for Astro and Particle Physics of the *Eberhard-Karls Universität* Tübingen.

September 2004 – March 2011 **Head of the “High Energy Astrophysics Group”** at the *Institut für Astronomie und Astrophysik* of the *Eberhard-Karls Universität* Tübingen.

October 2009 – March 2010 **Senior Visiting Scientist** at the Computational Astrophysics Laboratory of the Institute for Advanced Studies RIKEN, Japan.

January 2002 – August 2004 **Senior Staff Researcher** at *Istituto di Astrofisica Spaziale e Fisica Cosmica* del Consiglio Nazionale delle Ricerche (IASF-CNR).

November 1994 – January 2002 **Staff Researcher** at IFCAI-CNR, Palermo.

January 1993 – November 1994 **Contract Research Scientist** at IFCAI-CNR, *Dipartimento di Energetica ed Applicazioni della Fisica* dell' Università degli Studi di Palermo, and Columbia Astrophysics Laboratory, Columbia University, New York.

January 1992 – December 1992 **Visiting Associate Research Scientist** at *Columbia Astrophysics Laboratory*, Columbia University, New York.

December 1990 – September 1991, **Visiting Scholar** at *Columbia Astrophysics Laboratory*, *Columbia University* New York.

October 1989 – September 1991 - **Research Fellow** at IFCAI (CNR).

1.3 Education

July 1981- **Diploma Liceo Classico**, *Summa cum Laude* at Liceo Classico “*Vittorio Emanuele II*” in Palermo, Italy.

February 1987- **Dottore in Fisica**, after “*Laurea Summa cum Laude*” in *Fisica* at Università degli Studi di Palermo, Facoltà di Scienze, with a Research Thesis, whose title was “*Effetti della nuvola di fotoni virtuali nel decadimento di stati metastabili*”, i.e., on theoretical aspects of Quantum Electrodynamics, and in particular on the role of virtual clouds in the decaying of metastable states.

October 1989-September 1991 - *Specializzazione Post-Laurea* as **Research Fellow** of the Consiglio Nazionale delle Ricerche (CNR), at *Istituto di Fisica Cosmica e Applicazione dell'Informatica del CNR* (IFCAI-CNR) on “*Developments of X-ray polarimeters for application in Astrophysics*” (Supervisors: Prof. L. Scarsi, Dr. G. Manzo).

December 1990-September 1991, within the *Specializzazione Post-Laurea*, **Visiting Scholar** at *Columbia Astrophysics Laboratory*, *Columbia University* New York (Supervisor: Prof. R. Novick)

1.4 Honors, Fellowships and associations

2021 For the second time, Chinese Academy of Science President's International Fellowship.

2017 Member “*Organismo indipendente di valutazione della Ricerca dell' INAF*”, The Italian Institute for Astrophysics.

2017 Member of the Executive Board - *Consiglio di Amministrazione* of the GAL Hassin Foundation – International Center for the Astronomical Sciences -Isnello

2016 Chinese Academy of Science President's International Fellowship.

2010 Co-recipient, as member of the HESS collaboration, of the “Bruno Rossi” Prize for the scientific achievements of the HESS Telescope.

2007 Co-recipient, as member of the HESS collaboration, of the European “Descartes” Prize for research for the scientific achievements of the HESS Telescope.

2009 RIKEN Grant as distinguished Senior Scientist

1989-1994 Fellowships of the Consiglio Nazionale delle Ricerche, Italy.

Member of the Astronomische Gesellschaft (Germany)

Member of COSPAR

2.0 Scientific Positions

2.1 Positions relative to the scientific management and coordination of space and ground-based research projects

Since 1996, I have been responsible of and I have coordinated, at both national and international level, various space-based and, more recently, ground-based projects, in the field of High, Very High Energy and Ultra High Energy Astrophysics.

Periods	Project and responsibility
Jan. 2016-today	International Coordinator of the enhanced X-ray Timing Polarimetry mission led by CAS.
Dec. 2011-2018	Global coordinator of the JEM-EUSO Collaboration
May 2018- 2021	Co-Investigator of the THESEUS mission, an ESA's M5 mission study
Nov. 2017-today	Co-I of the HERMES Italian-led ASI mission
Mar. 2015-2018	Co-Investigator of the XIPE mission, an ESA's M4 mission study
Nov. 2013-today	Co-Investigator of the WFI on-board ESA's L2 mission ATHENA
Nov. 2012-2015	Co-PI of the LAD instrument and Co-I of the WFM instrument on-board LOFT, an ESA's M3 mission study.
Feb. 2012-today	Co-PI EUSO-Balloon, and Co-I EUSO-Super Pressure Balloon missions
Jan. 2011-2018	Coordinator of the ESA's Topical Team on Extreme Universe Space Observatory and PI of the ESA's ELIPS program on EUSO.
Jun. 2009-today	Group leader for the Kepler Center Tübingen of the Cherenkov Array Telescope Observatory
Dec. 2008-2017	European Coordinator of the JEM-EUSO Mission, vice-chairman of the International Liaison Team
Apr. 2005-today	Group Leader of the IAAT HESS Team, member of HESS collaboration.
Mar. 2010-Dec 2011	Chairman of the International Liaison Team of the JEM-EUSO Collaboration
Jun. 2009-Apr. 2012	Co-Investigator High Time Resolution Spectrometer for the International X-ray Observatory Mission of ESA
Jun. 2009 -Apr. 2012	Co-Investigator Wide Field Instrument for the International X-ray Observatory Mission of ESA.
Jan. 2008-Dec. 2009	Principal Investigator of the LED Instrument on-board the SIMBOL-X Mission, a French-Italian with German participation mission study for X-ray astronomy.
May 2007- 2011	Principal Investigator of the S-EUSO mission concept, proposed in the context of space based UHE studies and presented for the Cosmic Vision Program of ESA
Jan. 2007- today	Co-Investigator of the JEM-EUSO Mission for UHE studies onboard the ISS
Jul. 2006- today	Co-Investigator of the eROSITA mission, a German led telescope for X-ray astronomy, onboard Spectrum X-Gamma, currently in phase A.
Dec.2005- 2010	Co-Investigator of the MIRAX satellite, a Brazilian led satellite for X-ray astronomy.
Sept. 2004 – today	Co-Investigator of the Consortium of the <i>IBIS</i> instrument on board INTEGRAL.
Nov.2004- today	Co-Investigator of The INTEGRAL Scientific Data Center (ISDC) Consortium
2001 - 2006	Deputy Principal Investigator of The <i>Extreme Universe Space Observatory-EUSO</i> , an ISS Mission that successfully completed the ESA phase A study.

2002 - 2008	Responsible Scientist of the “ <i>Accreting Pulsars, persistent sources</i> ” observational program of the Integral Core Programme
2002 – 2008	Co-Responsible Scientist of the “ <i>Bright Low mass X-ray Binaries</i> ” observational program of the Integral Core Programme
1999 – Aug. 2004	Co-Investigator of the <i>IBIS</i> on board Integral, and Scientific Responsible of the IASF CNR/INAF Integral Hardware Team.
Apr. 1996 – Jun. 2003	Principal Investigator of the <i>High Pressure Gas Scintillation Proportional Counter</i> (HPGSPC) on-board the Italian X-ray Astronomy satellite BeppoSAX.
1994 – April 1996	Deputy Principal Investigator of the HPGSPC on-board BeppoSAX

2.2 Other selected positions related to the scientific activity

Period	Research Program Description
2021-today	Member of the HESS Steering Committee (German Universities Representative)
2018-today	International Review Expert of the China Manned Space Program in Space Utilization of the Technology and Engineering Center for Space Utilization (CSU) of the Chinese Academy of Sciences.
2018-today	International Expert for Research Planning in the Field of Space Astronomy of Mega Science Projects of China’s State Council
2018-today	Member of ESA’s THESEUS’ Science Study Team
2017-2018	Member of ESA’s Science Advisory Team for Research Opportunities on the Deep Space Gateway.
2015-2018	Member ESA’s XIPE Science Study team
2015-today	Member ESA’s Astronomy Working Group
2011-2014	Member ESA’s LOFT Science Study team
2009-today	Member of the Steering Committee of the eRosita Mission on board Spectrum X-Gamma.
2009-today	Member of the Steering Committee of the WFI Mission onboard Athena.
2009-today	Member of the Collaboration Board of the CTA Observatory
2008-today	Member of the International Liaison team of the JEM-EUSO Mission
2008 - today	Member of the Executive Committee of the JEM-EUSO Mission
2007 - today	Member of the team and of the steering committee of the eRosita Mission
2005- today	Member of the Collaboration board of the HESS and HESS II Collaborations
2006- 2008	Member of the Time Allocation Committee of the INTEGRAL Mission
2008- 2009	Member of the Steering Committee of the Simbol-X Mission
2003- 2005	Member of the working group preparing the “ <i>Modelli per Astrofisica delle Alte Energie</i> ”, national proposal for High Energy Astrophysics prepared under ASI contract.
2002- 2010	EUSO representative in the Astroparticle Physics European Coordination (ApPEC) and co-editor of the proposal “ <i>High Energy probe Distributed Observatory</i> ”, within the “ <i>Integrated Large Infrastructures for Astroparticle Science</i> ” UE FP6 proposal.
2001- 2004	Member of the PI team of the EUSO Mission
2001- 2004	Member of the PI team of the EUSO Mission
2002- 2004	Scientific Secretary of the EUSO-Scientific objectives Working Group
2002– 2005	Scientific Responsible of the IASF – Palermo Team on the Integral observational Programs “ <i>Monitoring of Accreting Pulsars</i> ” and “ <i>Monitoring of Bright Low Mass X-ray binaries</i> ”
1999- today	Member of the IBIS Co-Investigators working Group
1996- 2001	Member of the BeppoSAX Science Team
1993 – 2001	Member of the BeppoSAX Data Analysis Working Group
1994– 2001	Member of the BeppoSAX Experiment Investigator Working Group
1990- 1995	Member of the Italian team of the Stellar X-ray Polarimeter on-board the Russian Mission Spectrum X-Gamma.

2.3 Positions relative to the coordination of financed research Programs for observations or experimental developments.

In the last 10 years, I have obtained funds for more than 15M€ for my research activities. Of course the envelope of the funds involved for the enterprises I participated was much larger.

Period	Research Program Description
2021-2023	Principal Investigator proposal "Tübinger Beitrag zur Entwicklung und Planung der Missionen eXTP während the erweiterten Phase B", DLR
2019-2021	Principal Investigator proposal "Tübinger Beitrag zur Entwicklung und Planung der Missionen eXTP und THESEUS", DLR
2019-2022	Principal Investigator proposal "Beteiligung der Universität Tübingen am Wide Field Imager für ATHENA", DLR
2018-2021	Principal Investigator proposal "Experimental Evaluation of ATHENA Charged Particle Background from Secondary Radiation and Scattering in Optics (EXACRAD)", EUH2020
2018-2021	Principal Investigator proposal "High Energy Rapid Modular Ensemble of Satellites, Scientific Pathfinder (HERMES-SP)", EUH2020
2019-2026	Principal Investigator proposal "Beteiligung der Universität Tübingen an eROSITA", DLR
2019-2021	Principal Investigator proposal "Tübinger Beitrag zum sicheren Missionsbetrieb der Satellitenobservatorien INTEGRAL und XMM-Newton", DLR
2017-2018	Principal Investigator proposal "Tübinger Beteiligung an R&D zur Mission enhanced X-ray Timing Polarimetry (eXTP)", DLR
2017-2020	Principal Investigator proposal for "Verbundprojekt 05A2017 - CTA: CTA - das Cherenkov Telescope Array. Teilprojekt 6" German BMBF.
2016-2017	Principal Investigator proposal for "Tübinger Beteiligung an der Assessment Untersuchung zur Mission X-ray Imaging Polarimetry Explorer (XIPE)", DLR.
2014-2018	Principal Investigator proposal for "Technologieentwicklung und Simulationen für den Wide-Field Imager an Bord von ATHENA" DLR.
2014-2017	Principal Investigator of a proposal for "Verbundprojekt H.E.S.S.: Forschungs- und Entwicklungsarbeiten an einem hybriden Cherenkov-Teleskopsystems als Vorbereitung für das CTA-Projekt. Teilprojekt 3" German BMBF.
2014-2017	Principal Investigator of a proposal for "Verbesserung und Überwachung der Punktabbildungsfunktion von H.E.S.S.-CT5, und Koordination der Multifrequenz beobachtungen von TeV-Quellen" German BMBF.
2009-2021	Principal Investigator of the proposal "Beitrag zum sicheren Missionsbetrieb von Integral und XMM-Newton", DLR.
2007-2021	Principal Investigator of the proposal "Tübingen Beteiligung an eRosita für die Spectrum Roentgen-Gamma Mission", DLR.
2013-2015	Co-Principal Investigator of a proposal for "Outflow-Aktivität im Massen-Regime von Braunen Zwergen", DFG.
2013-2016	Principal Investigator of a proposal for "'HESS J1731-347, ein neuer, rein nicht-thermisch emittierender Supernova-Überrest", DLR.
2013-2015	Co-Principal Investigator of a proposal for "Untersuchung der Röntgendoppelstern-Population im Wechselwirkenden Galaxienpaar NGC 1512 und NGC 1510", DLR.
2010-2013	Principal Investigator of a proposal for "Technologische Vorbereitung auf LOFT" DLR.
2010-2015	Co-Investigator of a proposal for "Nearby Galaxies in X-rays: Studying their Components and Global Evolution" DFG.
2012-2014	Co-Investigator of a proposal for "'Untersuchung von Supernova-Überresten in der Großen Magellanschen Wolke", DLR.
2013-2016	Co-Principal Investigator of a proposal for "Supernova Remnants: TeV emission from sources of nonthermal interstellar medium energy", DFG.
2013-2015	Principal Investigator of a proposal for "XMM-Newton und INTEGRAL-Beobachtungen Akkretierender Pulsare", DLR.
2010-2013	Principal Investigator of a proposal for "Technologische Vorbereitung auf LOFT" DLR.
2012-2013	Principal Investigator of a proposal for "Simulationen zur wissenschaftlichen Leistungsfähigkeit von MIRAX" DLR.

2010-2014	Principal Investigator of several proposals for “ <i>experimental studies for space based observations of UHECRs</i> ” DLR.
2010-2014	Principal Investigator of the proposal “ <i>XMM-Newton und INTEGRAL Beobachtungen kompakter galaktischer Quellen</i> ”, DLR.
2010-2012	Principal Investigator of the proposal extension “ <i>Technologische Vorbereitung auf IXO: Entwicklung schneller digitaler Detektorelektronik und Simulationen</i> ”, DLR.
2009-2012	Principal Investigator of the proposal “ <i>ASPERA-CTA: Entwicklung eines Prototypen für die Spiegelsteuerung der CTA-Teleskope und Weiterentwicklung eines Spiegelteststandes zur Qualitätsprüfung von CTA-Spiegeln</i> ”, German BMBF.
2008-2014	Principal Investigator of the proposal “ <i>Spiegelstueuerung für H.E.S.S. II und on-site Spiegelrefurbishment</i> ”, BMBF.
2008 - 2013	Principal Investigator of the proposal “ <i>Fundamentale Physik im Röntgenpulsar Hercules X-1:Analyse und Interpretation von INTEGRAL-Beobachtungen</i> ”, DLR.
2008 – 2016	Principal Investigator of the proposal “ <i>Observation of X-ray pulsating transients with INTEGRAL</i> ”, DLR.
2009-2010	Principal Investigator of the proposal “ <i>Technologische Vorbereitung auf IXO: Entwicklung schneller digitaler Detektorelektronik und Simulationen</i> ”, DLR.
2008-2009	Principal Investigator of the proposal “ <i>Vorbereitung auf Simbol-X und XEUS</i> ”, DLR.
2007-2009	Principal Investigator of the proposal “ <i>Beitrag zum sicheren Missionsbetrieb von Integral und XMM-Newton</i> ”, DLR.
2007-2010	Principal Investigator of the proposal “ <i>Temporal and spectral studies of the high mass X-ray binary EXO 2030+375 observed with INTEGRAL during a giant outburst</i> ”, DLR.
2007-2010	Principal Investigator of the proposal “ <i>INTEGRAL Beobachtungen von GX 301-2 und X-PER</i> ”, DLR.
2006-2010	Principal Investigator of the proposal “ <i>Comprehensive modelling of pulse shape formation in binary X-ray pulsars</i> ”, DFG.
2006-2008	Principal Investigator of the proposal “ <i>Vorarbeitung auf Simbol-X und XEUS</i> ”, DLR.
2005-2006	Co-Principal Investigator of the proposal “ <i>Vorarbeiten zum Fast Timing Detektor von XEUS</i> ”, DLR.
Jan 2005- 2008	Co-Principal Investigator of the proposal “ <i>XMM-Newton Beobachtungen der ersten unidentifizierten hochenergetischen TeV Gamma-Quelle in der Cygnus Region</i> ”, DLR.
Jan.2005 - 2008	Principal Investigator of the proposal “ <i>Erforschung des Röntgenpulsars Her X-1 mit INTEGRAL</i> ”, DLR.
Jan. 2005-2008	Principal Investigator of the proposal “ <i>Observations of Accreting X-ray Pulsars and NS in LMXRB with INTEGRAL</i> ” DLR.
Sept.2004- 2007	Co-Principal Investigator of the proposal “ <i>Beiträge zum sicheren Betrieb von INTEGRAL- Anbord-Intelligenz von IBIS und das INTEGRAL Science Data Center (ISDC)</i> ”, DLR.
2002 – 2005	Co-Editor of the Nationally Coordinated Proposal “Astrofisica delle Alte Energie” submitted by the High Energy and Astroparticle Astrophysics Italian Community in response to ASI AO for “Nuove Missioni per l’Osservazione dell’Universo” In particular, Editor of the sub-proposals “ <i>R&D for Space Based Astroparticle Research</i> ” and “ <i>The Extreme Energy Universe Observatory- EUSO</i> ”.
1999–2004	Scientific Responsible of activities of the IASF - Palermo Hardware Team on the IBIS onboard-Integral.
2000 – 2004	Co- Principal Investigator and responsible for IASF- Palermo of the ASI Research program “ <i>X-ray binary sources from BeppoSAX to INTEGRAL: data from current satellites and archival data</i> ”.
2001 - 2004	Co- Principal Investigator and responsible for IASF-Palermo of the ASI Research program “ <i>Scientific Exploitation of IBIS/INTEGRAL data: a set of data to discern the γ-ray domain phenomena</i> ”.
2000 - 2002	Co- Principal Investigator and responsible for IASF-Palermo of the ASI Research program “ <i>Observational, Numerical and Theoretical studies of Accretion driven X-ray Binary sources</i> ”.
1999- 2000	Principal Investigator of the ASI Research program “ <i>X and soft gamma studies of neutron star binary sources: timing and spectral properties with BeppoSAX and RXTE; preparation of the Integral Mission</i> ”.

1996- 2002	Co-Principal Investigator for the ASI Research program on “ <i>BeppoSAX: Satellite per Astronomia X</i> ” and in particular Principal Investigator of the “ <i>HPGSPC research project</i> ”.
1993- 1996	Co-Principal Investigator for the ASI Research program “ <i>The HPGSPC onboard BeppoSAX</i> ”.
1992- 1995	Co-Investigator of the CNR National Committee funded research program on “ <i>Study on the polarization dependence of photocathode photoemission induced by Polarized X-ray radiation</i> ”, jointly conducted with the Columbia Astrophysics Laboratory of New York.
1992	Co-Investigator of NASA research program “ <i>SXRP/SXRG Software Development, Mission Operations Planning, and data management planning</i> ”.
1992	Co-Investigator of the research Program at the Brookhaven Synchrotron Light Source “ <i>The Study of the Angular Distribution of X-ray photoemission and its polarization dependence</i> ”.

2.4 Miscellanea

Participation to International Space Science Institute Teams:

2010 Team lead by G. Schönherr Physics of the Accretion Column of X-ray pulsars (Special participant)

2008 Team led by Jim Hinton, Identifying the UHECR accelerators using gamma-rays

2006 Team led by Joern Wilms, Formation of Cyclotron Lines in Neutron Star Accretion Columns

Acting as Editor for:

Associated Editor for The Journal of High Energy Astrophysics (Elsevier, since Jan. 21)

Editor of Experimental Astronomy (Springer)

Editorial Fellow at SciPost

Associated Guest Editor of Science China Physics, Mechanics & Astronomy (SCI CHINA PHYS MECH)

Editor in Chief of the running project for the ‘Handbook of High Energy Astrophysics’, a monumental work in 4 volumes to be published by Springer.

Acted or acting as referee or reviewer for:

Journals:

Nature Astronomy (Nat. Astron.)

Astronomy & Astrophysics (A&A)

The Astrophysical Journal (ApJ)

The Astrophysical Journal Letter (ApJ Lett.)

The Astrophysical Journal Supplement Series (ApJS.)

The Astronomical Journal (Astron. J.)

The Journal of High Energy Astrophysics (JHEAp)

Experimental Astronomy (Exp. Astr.)

Monthly Notices of the Royal Astronomical Society (MNRAS)

Astroparticle Physics (Astr. Phys.)

Progress in Particle and Nuclear Physics (PROG PART NUCL PHYS.)

Nuclear Instrument and Methods A (NIM A)

Research in Astronomy and Astrophysics (RAA)

Advances in Space Research (Adv. Sp. Res.)

ASTRA (ASTRA Proc.)

Results in Physics (RESULTS PHYS)

Frontiers in Physics

Institutions:

European Space Agency (ESA)
The Italian Space Agency (ASI)
The National Aeronautics and Space Administration (NASA)
Dutch National Science Foundation (NWO)
Swiss National Science Foundation (SNSF)
European Science Foundation (ESF)
French National Center for Scientific Research (CNRS)
Romanian National Research Council for Scientific Research (RNRC)
German Research Foundation (DFG)
Max Planck Society (MPG)
Humboldt Foundation
Helmholtz Society
Deutsche Akademie der Naturforscher Leopoldina – Nationale Akademie der Wissenschaften –
Istituto Nazionale Astrofisica (INAF)
Irish Research Council for Science, Engineering and Technology (IRCSET)
Fonds voor Wetenschappelijk Onderzoek - Vlaanderen – FWO (Belgium)
Foundation for Polish Science (FNP)
National Science Centre Poland
Danish National Research Foundation (DG)
Czech Science Foundation (GACR)
ANVUR (IT)
Foundation for Research & Technology – Hellas (FORTH) (Greece)
Paris Region Fellowship Programme (ParisRegionFP)

UNAM, Mexico City, Mexico
APC, Paris, France
Institute of High Energy Physics, CAS, China
University of Palermo, Italy
University of Torino, Italy
University of Geneva, Swiss Federation
Universidad Complutense Madrid, Spain
Colorado School of Mines, US
University College London, UK
University of Tübingen (Germany)
Durham University (UK)
Southampton University (UK)
University of Cork (Ireland)

Organizer, Adviser of Scientific Events:

Scientific Program Committee SPIE conference on “*Space Telescopes and Instrumentation 2022: Ultraviolet to Gamma Ray*” July 17-22, 2022 in Montréal, Québec, Canada

Scientific Organizing Committee SS9 on eXTP at EAS 2022, Valencia, Spain (27 June-1 July)

Scientific Program Committee SPIE conference on “*Space Telescopes and Instrumentation 2020: Ultraviolet to Gamma Ray*” Yokohama, Japan, June 14-19, 2020. (It went online).

Scientific Organizing Committee International Conference on “*Frontier Research in Astrophysics - IV*” Palermo, Mondello (Italy), June 8-13, 2020.

Science Organizing Committee International Conference on “*THESEUS Conference 2020*”, Malaga (Spain), May 12-15, 2020

Scientific Organizing Committee International Conference on “*Multifrequency behaviour of High Energy Cosmic Sources XIII*” Palermo, Mondello (Italy), June 3 -8, 2019.

Scientific Organizing Committee Scientific International Conference on “*The third PANDA Symposium on Time Domain Astronomy and first results from INSIGHT-HXMT*” Chengdu (China), June 18 – 22, 2018.

Scientific Organizing Committee Scientific International Conference on “*Frontier Research in Astrophysics – III*” Mondello (Italy), May 28 – June 2, 2018.

Scientific Organizing Committee of the International Workshop on “*THESEUS*”, Napoli, (Italy), October 5-6, 2017.

Scientific Organizing Committee International Conference on “*Multifrequency behaviour of High Energy Cosmic Sources XII*” Palermo, Mondello (Italy), June 12 -17, 2017.

International Scientific Organizing Committee co-chair International Conference on “*High throughput X-ray Astronomy in the eXTP era*” Rome (Italy), February 6-8 2017.

International Scientific Organizing Committee International Conference “*The Lake Baikal Three Messenger Conference*” Listvyanka at Lake Baikal (Russia), August 29-September 3, 2016.

Scientific Organizing Committee International Conference on “*Accretion Processes in Cosmic Sources: Young Stellar Objects, Cataclysmic Variables and Related Objects, X-ray Binary Systems, Active Galactic Nuclei*” Saint-Petersburg (Russia), September 4-10 2016.

International Advisory Committee 10th Cosmic Ray International Seminar (CRIS 2016) on “*Fundamental Topics in Astro-particle Physics*”, Ischia (Italy), July 4-8 2016.

Scientific Organizing Committee COSPAR Event: “*X-ray Polarimetry: Experiments and Science Prospects*” COSPAR 41st Scientific Assembly Istanbul (Turkey), July 30 -August 7 2016.

Scientific Organizing Committee Scientific International Conference on “*X-ray Imaging Polarimetry Explorer (XIPE)*” Valencia (Spain), May 24 -26 2016.

Scientific Organizing Committee Scientific International Conference on “*Frontier Research in Astrophysics – II*” Mondello (Italy), May 23 -28 2016.

Scientific Organizer and Co-Editor of the International Conference on “*Multifrequency behavior of High Energy Cosmic sources*”, Palermo (Italy), May 25-30 2015.

Scientific Program Committee SPIE conference on “*Space Telescopes and Instrumentation 2014: Ultraviolet to Gamma Ray*” Montreal June 22-27 2014.

Scientific Organizer International Conference on “*Frontier Research in Astrophysics*”, Mondello (Italy), May 26-31 2014.

Scientific Organizing Committee of the Astronomische Gesellschaft, 150 years Jubiläum on “*Waves and Particles: Multi-Messengers from the Universe*”, Tübingen (Germany), September 23-27 2013.

Scientific Organizing Committee of the International Conference on “*Physics at the Magnetospheric Boundary*”, Geneva (Switzerland) June 25-28 2013.

Scientific Organizer and Co-Editor of the Proceedings of the Frascati Workshop 2013, Vulcano (Italy), on “*Multifrequency behavior of High Energy Cosmic sources*”.

Scientific Organizing Committee of the Second “*LOFT Science meeting*”, Toulouse (France), September 24-27 2012.

International Advisory Committee for the Symposium "Tours 2012" on “*Nuclear Physics and Astrophysics*”, Black Forest (Germany), September 1-7 2012.

Scientific Organizing Committee of the First “*LOFT Science meeting*”, Science Park Amsterdam (The Netherland), October 26-28 2011.

Scientific Organizer and Co-Editor of the Proceedings of the Frascati Workshop 2011, Vulcano (Italy), on “*Multifrequency behavior of High Energy Cosmic sources*”.

International Scientific Advisory Committee of the International Conference “*The First Year of MAXI: Monitoring variable X-ray sources*”, Aoyama, Tokyo (Japan), November 30 - December 2 2010.

Scientific Organizer and Co-Editor of the Proceedings of the Workshop “*The Many faces of accreting pulsars*”, Tübingen (Germany), 2010.

Scientific Organizer and Co-Editor of the Proceedings of the Frascati Workshop 2009, Vulcano (Italy), on “*Multifrequency behavior of High Energy Cosmic sources*”.

Scientific Organizer and Co-Editor of the Proceedings of the Frascati Workshop 2007, Vulcano (Italy), on “*Multifrequency behavior of High Energy Cosmic sources*”.

Co-Editor of the “**IASF-CNR Scientific and Technical Plan for 2003-2005**” and coordinator of the “*Disciplinary Area*” on “*Astro-particle*”.

Principal Investigator of more than 20 and **Co-Investigator** of about 40 accepted Observing proposal with BeppoSAX, RXTE, XMM, Chandra, INTEGRAL, mainly devoted to the study of accreting X-ray binary pulsars, Low Mass X-ray Binaries, Black hole candidates.

Prof. Santangelo is author of about 470 publications on refereed journals and of about 300 min proceedings of international conferences, Atels etc., in the following fields of research: Experimental developments for X-ray Astrophysics; Experimental developments for TeV Astrophysics; space based studies of UHE particles; Accreting Pulsars; Low Mass X-ray Binaries; Black Holes; TeV sources; UV observation of the Earth, Indirect Dark matter search.

Annex 1 Other positions related to teaching

Since September 2004, **Full Professor für “experimentelle Hochenergie-Astrophysik”** at *Eberhard-Karls Universität* Tübingen, Germany.

Courses: General Physics I, General Physics II, Introduction to Astronomy and Astrophysics, High-Energy Astrophysics I & II, Introduction to High-Energy Astrophysics, Observational Cosmology, Extragalactic Astronomy, Sources in our Galaxy, Astroparticle Physics, The Universe with Neutrinos and Gravitational Waves, Neutrino Physics and Astrophysics, Astrophysics of Cosmic Rays and TeV Gamma Rays, Experimental High Energy Astrophysics, Laboratory Courses.

Anno Accademico 2002-2003 **Professore a Contratto** of “General Physics” at “*Facoltà di Ingegneria*”, Università di Palermo, for Corsi di Laurea in “*Ingegneria Chimica*”, “*Ingegneria Aerospaziale*” and “*Ingegneria delle Sicurezza e delle Tecnologie Nucleari*”

Anno Accademico 2001-2002 **Professore a Contratto** of “General Physics II” at “Facoltà di Ingegneria”, Università di Palermo, for Corsi di Laurea in “*Ingegneria Elettronica*” and “*Ingegneria Informatica*”

Anno Accademico 2000-2001 **Professore a Contratto** of “General Physics II” at “Facoltà di Ingegneria”, Università di Palermo, for Corsi di Laurea in “*Ingegneria Aerospaziale*” and “*Ingegneria Informatica*”

Supervisor or Co-Supervisor of more than 60 of *Habilitationarbeit, Doktorarbeit, Diplomarbeit, and Master thesis* at University of Tübingen, and *Dottorati, Borse di Studio, and Assegni di Ricerca* , at IASF and IFCAI CNR.

January 2011- 2020 Member of the “*Forschungskommission*” of the Faculty of Science of the Eberhard Karls University of Tübingen

January 2011 - today Member of the Faculty Council of the Faculty of Science of the Eberhard Karls University of Tübingen.

September 2004 - 2011 Member of the Faculty Council of the Faculty of Mathematik und Physik of the Eberhard Karls University of Tübingen.

October 2011 - today Member of the “*Studienkommission*” of the Fachbereich Physik of the Faculty of Science of the Eberhard Karls University of Tübingen.

October 2006 - 2011 Member of the “*Studienkommission*” of the Faculty of Mathematik and Physik of the Eberhard Karls University of Tübingen.

February 2002 - September 2004 Member of the *Comitato d'Istituto* of the IASF-CNR and, in collaboration with Dr. B. Sacco, **Coordinator** of the disciplinary area “Astroparticle ” of the IASF CNR.

Anno Accademico 2002-2003 Member of the *Consiglio di Facoltà* of “Facoltà di Ingegneria”, Università di Palermo, and of *Consiglio di Corso di Laurea* for Corsi di Laurea in “*Ingegneria Chimica*”, “*Ingegneria Aerospaziale*” and “*Ingegneria delle Sicurezza e delle Tecnologie Nucleari*”.

Anno Accademico 2001-2002 **Member of the Consiglio di Facoltà** of “Facoltà di Ingegneria”, Università di Palermo, and of *Consiglio di Corso di Laurea* for Corsi di Laurea in “*Ingegneria Elettronica*” and “*Ingegneria Informatica*”.

Anno Accademico 2000-2001 **Member of the Consiglio di Facoltà** of “Facoltà di Ingegneria”, Università di Palermo, and of *Consiglio di Corso di Laurea* for Corsi di Laurea in “*Ingegneria Aerospaziale*” and “*Ingegneria Informatica*”.