




PERSONAL INFORMATION

Salvatore Sciortino



 Piazza del Parlamento 1, Roma
 +39 091 233230
 sciorti@astropa.inaf.it, salvatore.sciortino@inaf.it

Sex M | Date of birth 23/20/1955 | Nationality Italian

CURRENT POSITION

Astronomo Ordinario (Chair of Astronomy); Chief Officer for the Relations with Universities, Research Institutions and Local Authorities & Chief Officer for the Development of the Museum and Historical Heritage of INAF (Italian National Institute for Astrophysics)

WORK EXPERIENCE

Researcher at Osservatorio Astronomico di Palermo; Professor at Università degli Studi di Palermo; Past Director of INAF-Osservatorio Astronomico di Palermo and INAF-Osservatorio Astrofisico di Catania.

EDUCATION AND TRAINING

- 1978 Laurea in Physics cum laude Università di Palermo with Giuseppe S. Vaiana (part of thesis at Harvard Smithsonian CFA, Cambridge, MA, USA)
- 1979 - 1980 Cugino Research Fellowship at the Università di Palermo
- 1981 - 1984 Visiting Scientist at the Harvard-Smithsonian CFA
- 1985-1986 Science Senior Fellowships of Italian National Council of Research at Harvard-Smithsonian CFA
- 1992 Visiting Scientist at the Dep. of Astronomy, University of Chicago

PERSONAL SKILLS

Mother tongue Italian

Other Language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
Proficient	Proficient	Proficient	Proficient	Proficient
ENGLISH				
Replace with name of language certificate. Enter level if known.				

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Organisational / managerial skills

SS has been involved in several science projects and their management since his thesis (1978) until today. He has also been one of the handful key scientists that have refounded in the '80s, under the guide of the late G. S. Vaiana, the Osservatorio Astronomico di Palermo thanks to the start of strong, innovative, internationally recognized research program in Astrophysics in Palermo.

He contributed to the realization of the two major European and US missions of imaging X-ray astrophysics, the ESA cornerstone *XMM-Newton* and the NASA *Chandra* Large Observatory) both flown in 1999, and was active in promoting and directing research in X-ray astrophysics in Italy, in Europe and in US.

Since his first involvement (1977-1979) in the CFA Balloon Borne 1 meter IR telescope, a program lead by G. Fazio, equipped with the Palermo-CFA innovative four colour photometer and NASA *Einstein* satellite (1978-81) program, led by the Nobel Laureate R. Giacconi, his science and managerial roles have continuously increased.

In 1985 he lead, together with Dr. F. R. Hamden, Jr. at CFA, the ideation and the realization of the *Einstein Stellar X-ray Database*, the first database of a space mission results based on *INGRES*, at the time, the most innovative relational database system. In 1986 he joined the Palermo Observatory team that has supported the realization of the *Chandra* High Resolution Camera (HRC) and has been very active in the science exploitation of the Chandra Stellar GTO program. The HRC has been working smoothly in orbit since 16 years and continues to being used by the world-wide community. In 1987, he was selected as Co-Investigator for the focal plane instrument (EPIC) of ESA cornerstone mission in X-ray astronomy "XMM-Newton". EPIC has been in orbit for more than 16 years and has been and still is the most productive X-ray astronomy instrument ever flown.

Starting in 1989, he was appointed as Deputy Director and member of the Board of Directors of the Osservatorio Astronomico di Palermo "Giuseppe S. Vaiana", a position he held till 2001. He has been national coordinator of several ASI programs for the exploitation of space science data (1988-1996), of a PRIN-MIUR program (2000-2002), responsible of a research unity of two other PRIN-MIUR programs (2002-2006).

In 2002, SS was appointed Director of the Osservatorio Astronomico di Palermo (OAPA), one of the research structure of the, at the time, just started INAF (National Institute of Astrophysics). He has held that position since 2011. In this role he has participated to the complex, initial, phases of the INAF, has strongly increased the capacity of OAPA and, in general, of INAF in Sicily i) by guiding three MIUR programs for the development of research infrastructures and for high level formation of young researchers, ii) by realizing the new, current, site of the INAF-OAPA laboratory and machine shop in Palermo, iii) by guiding the program for the realization of new INAF headquarters in Palermo, iv) by representing (2005-2011) INAF in the Board of Directors of the COMETA consortium for the realization, thanks to a MIUR PON grant, of a large ICT infrastructure in Sicily. In 2012 he was appointed as extraordinary Director of Osservatorio Astrofisico di Catania, a position he held for 6 months. From 2002 to 2010 SS was member of the Committee of the INAF Research Structure Director and from 2009 to 2010 was member of the restricted Director committee advising the INAF President and Board of Directors. From 2012 to April 2016 was the HEAD of one of the Central Unit of the INAF Science Directorate, currently is the Chief Officer for the Relations with Universities, Research Institutions and Local Authorities & Chief Officer for the Development of the Museum and Historical Heritage as part of the INAF Presidency.

In 2002-2004 he led with M. Tavani and G. Puglierin the realization of the document illustrating the Italian program for the High Energy Astrophysics and has collaborated to the realization of the document for the program for the years 2004-2006. He has been part of the top level board implementing the later program thanks to the resulting ASI contract. He has been appointed in several INAF committees to study and prepare reports on various aspects of INAF management and science organization.

SS has been appointed by ESA as member of the XEUS Definition Team, of the IXO Science Definition Team and member of the ATHENA (Advanced Telescope for High Energy Astrophysics) Study Team. Athena has been selected in 2014 as the mission candidate for the second Large ESA mission of the Cosmic Vision program whose launch is foreseen in 2028. He is a senior member of the Athena Italian group, chairperson of one of the Athena Science Wgs, member of the international Athena X-IFU Science Team.

SS is a strong supporter of illustrating astrophysics and science in general to primary school students and to wide audience. In his capacity as Director of Osservatorio Astronomico di Palermo and of the Osservatorio Astrofisico di Catania he has promoted and has participated to public outreach initiatives as well as to didactic al initiatives toward primary and secondary schools. In his role as member of the INAF Science Directorate he has promoted the INAF participation to the Astronomy Olympic game,

Job-related skills

SS was instrumental in developing stellar X-ray astronomy as a new high-energy discipline.

After taking part, in the early eighties, in establishing the stellar coronal emission as a typical characteristics of solar-like and OB stars and in the firm demonstration of the decrease of stellar coronal luminosity with increasing stellar age. He then, thanks to the systematic reanalysis of the about 4000 *Einstein* observations, lead the first systematic investigation of the properties of X-ray emission of O and early B stars and coordinated studies of coronal emission of several stellar samples, such as the late-B, the M stars, etc.

As a result of this many decade long effort SS created in Palermo a new school on the phenomenology and physics of X-ray emission from “normal” stars that it is today internationally recognized.

Combining, over more than decade, X-ray (first from *Einstein* and later from *ROSAT*) and optical data, the SS's group has evaluated the first X-ray luminosity functions of “normal” stars in the Galaxy and have published crucial contribution to the field of stellar activity, mainly traced by coronal emission, and its dependence on stellar rotation, and on structural changes due to stellar evolution. Results on the dependence of coronal luminosity on mass, age and rotation have been summarized in a paper (2003, *A&A* 397, 147) that has obtained, so far 327 citations (data from ADS), being one of the most cited in its research field. In the early '90 with a series of papers SS and its collaborators have analysed in detail the properties of the stellar content of the EMSS and, by building, for the first time, a model of the content of the normal stellar population in the Galaxy, and by a series of dedicated optical program at ESO telescopes have been able to show firm evidence of a yellow star excess in EMSS possibly associated to a population of RS Cvn-like stars.

With the launch, in 1999, of *Chandra* and *XMM-Newton*, SS and his group have focused their research on the X-ray emission from Young Stellar Objects in various nearby star forming regions. Crucial contributions have been given to the study of the Orion Nebula regions – thanks to a very deep (~1Msec) *Chandra* observation of Orion central region – and of NGC 2264 and rho Ophiuchi core F regions. SS and his group have shown, for the first time (in 2003), statistically convincing, evidence that the X-ray emission level of accreting YSO is, on average, a factor 2 lower than the emission from non-accreting, more evolved, YSO. This has started

SS and his collaborators have shown, for the first time, convincing evidence of the existence of loop-like magnetic structure connecting the young star surface and its circumstellar disk (at co-rotation radius) and have shown that time variable Fe 6.7 keV K α emission, due to disk material, is quite common among YSOs. The standard scenario of disk material photo-ionized by central star coronal emission has been challenged by SS and its collaborators that by a joint study of star coronal emission level and Fe K α EW time variability have argued the need for excitation due to energetic electrons. Till today the nature of the excitation mechanism has not been firmly established, and this, as well the existence of big magnetic structures connecting star and disk, have stimulated, and continues today, modelling work on the interaction between circumstellar disk and high-energy emission and its effect on early disk evolution. Indeed the influence of X-ray emission from YSO central star occurring during the initial few million years of stellar/protoplanetary system has been realized to be a key ingredient of circumstellar disk evolution and planetary system formation. Since 2005 several papers addressing these issues have been published, they have collected more than 150 citations each and are among the most cited papers in their research field.

Recently (2013-2015), SS and his collaborators have been investigating the existence and nature of the so-called SPI (Star-Planet Interaction) phenomena, i.e. the influence on the stellar coronal and chromospheric emission levels due to a close orbiting hot-Jupiter. In a series of recent papers they have shown evidence in HD 189733 of material “evaporating” from the hot-Jupiter and falling on the star surface likely funnelled by the star-planet interconnected magnetic fields as well as evidence that the star-planet interaction can, in the case of thin-convection zone stars such as WASP 18, strongly perturb or even suppress the dynamo action resulting in a X-ray dark star.

He is author of more than 410 scientific publications, more than 170 in international professional journals. As measured by Google Scholar in 2016, his publications have collected > 8000 citation, and have h-index=48, i10=144. His current main scientific interests concentrate on the high energy emission from young and pre-main sequence stars and its effect on planetary system, and on studies of next generation X-ray missions.

Computer skills

High level competence in the use of computer systems both for numerical computation and as a tool for elaboration of textual and graphical information Participation in and coordination of the development of innovative data analysis methods and their software implementations. Fluent in the use of UNIX/LINUX operating system and related tools, good knowledge of Windows and related tools.

Driving licence B:

ADDITIONAL INFORMATION

Publications

See complete list: <http://www.astropa.inaf.it/~sciortino>
(Citations: >8000, source: Google Scholar) h-index = 48
 - Papers in international refereed journals: >170
 - Invited papers :15
 - Other scientific papers: > 240

Projects

- 1978-1979 **The Palermo Four FIR Photometer for the Balloon Borne 1 m CFA FIR telescope**: Data Reduction Group Member.
- 1980-1990 **NASA Einstein Observatory**: Member of the Palermo-CFA stellar team for data analysis. Group leader for "The Stellar Einstein Database".
- 1987-1998 **Member of team for the realization of the HRC of Chandra, one of NASA Great Observatories.**
- 1988-1998 **Co-Investigator on the EPIC (European Photon Imaging Camera) on XMM-Newton, ESA cornerstone mission.**
- 1990-1998 **NASA-DLR ROSAT Observatory**: PI/Co-I of several proposals.
- 1996-1999 **ASI SAX Mission**: PI/Co-I of proposal and Flight data analysis.
- 1996-1997 **ESA Hipparcos (astrometry)**: Flight data analysis.
- 1997-1998 **CFA-Palermo ROSAT Galpipe Program**, Palermo Group leader.
- 1997-1999 **NASA/JAXA ASCA**: Flight data analysis.
- 2000-present **ESA XMM/Newton**: PI/Co-I of several proposals. Flight data analysis.
- 2000-present **NASA Chandra**: PI/Co-I of several proposals. Flight data analysis.
- 2007-2009 **ESA XEUS**: Member of the Science Study team appointed by ESA.
- 2010-2011 **ESA/NASA/JAXA IXO**: Member of Science Team, Thematic Science WG Chairperson
- 2011-2013 **ESA ATHENA**: Member of the Science Study Team appointed by ESA.
- 2014-present **ESA ATHENA**: Thematic Science WG Chairperson, member of the X-IFU Science Team.
- 2015-present **AHEAD EU Infrastructure** funded project: Leader of one WP and member of the management team

Honours and awards

1986 National Council Research award in recognition of excellence in research as international fellow
1999 Team Achievement Award for participation to the XMM-Newton realization.