

# Curriculum Vitae et Studiorum of Patrizia A. CARAVEO

## Temporal Milestones

- Born in Milano on April 8th, 1954
- Italian degree of Laurea in Physics with Full Academic Honor at the University of Milano in 1977
- Mid 1977-mid 1978 Collaborateur Temporaire Etranger at the Service d'Astrophysique of the C.E.A. de Saclay (France)
- **1978-1982** CNR fellow for "Analysis and Astrophysical Interpretation of Gamma-Ray Astronomy data" at the IFCTR of the Consiglio Nazionale delle Ricerche, Milano. During this period, in parallel to COS-B work, intense activity as Guest Observer both with Einstein and EXOSAT.
- **1978-1985** Member (later official Milano representative) of the Data Reduction Group of the Caravane Collaboration of the COS-B satellite.
- **1982** wins a position of Staff Scientists at the IFCTR/CNR, Milano
- **1987** Winner of a 2 months NATO senior fellowship to be spent at the SAP (Saclay, France) for the preparation of the multiwavelength observing program for the low energy gamma-ray astronomy mission SIGMA
- **1987-1988** Member of the Phase A study for the ESA Gamma-Ray Astronomy mission GRASP
- in the course of 1987, starts her activity as an optical observer, first as a CoI and then as a PI at various telescopes, mostly at ESO
- **1988** Member of the COSPAR sub-Commission E1 (Galactic and Extragalactic Astronomy)
- **1989** invited back in Saclay to carry-out the multiwavelength (mostly Optical) campaign for the understanding of the SIGMA low energy gamma-ray sources
- **1989-today** Member of the System Team for the EPIC instrument, now flying on the ESA cornerstone mission XMM-Newton, with special interest in optical/IR observations
- **1990-1995** Vice President of the Italian Space Society
- Since **1990** takes active part in the Hubble Space Telescope observations and is PI of proposals in Cycles 2,5,6,8 and is CoI in proposals for Cycles 1, 3, 4, 5, 6, 8, 9, 11
- **1994** Member of the Editorial Board of Astrophysical Letters and Communications
- **1994** Becomes **CoInvestigator** for the Spectrometer Instrument (SPI) on ESA's Gamma-Ray mission INTEGRAL, with hardware responsibilities towards CNES
- **1997** wins a position of Primo Ricercatore (Senior Staff Scientist) at the IFCTR/CNR, Milano
- **1997** nominated European Coordinator for the observing time allocation of the EPIC experiment on XMM
- **1998** becomes member of the GLAST Science Team
- **1998** becomes **CoInvestigator** of the NASA **SWIFT** MIDEX mission (in charge for the ground station)
- **1998** **CoInvestigator** and key person for **AGILE**, the first small mission of the Italian Space Agency dedicated to gamma-ray astronomy
- **1999** Leader of the science Team behind the ESA study "NGST Data Management"
- **1999** **CoInvestigator** for the GLAST mission

- 1999 and 2002** Member of the XMM-Newton Time Allocation Committee
- 1999–2002** member of the ESA Science Working Team for NGST
- 2000** Member of Chandra Time Allocation Committee
- 2001-2003** member of the Astronomy Working Group of the European Space Agency
- since 2002 PAC is Research Director at the IASF-INAF Milano**
- 2002** « Qualification aux fonctions de Professeur des Universités », section 34 : Astronomie, Astrophysique
- 2005-2008** serves as Co-leader of the GLAST Working Group devoted to devise the strategy to identify gamma ray sources
- 2005** is part of the Hubble Space Telescope Time Allocation Committee
- since **2005** scientific coordinator of the ASI contract devoted to the Italian participation to GLAST
- 2007** Co-Chair of the Astronet Panel “High-energy, astro-particle astrophysics and gravitational waves”
- 2009** Winner of the “Premio Nazionale Presidente della Repubblica”
- 2010 deputy coordinator for the Aerospace Panel within the Programma Operativo Nazionale (PON) of the MIUR.
- 2010 becomes Director of the Istituto di Astrofisica Spaziale e Fisica Cosmica (IASF) of the Istituto Nazionale di Astrofisica (INAF)**
- 2012 INAF representative within CTA (Cherenkov Telescope Array) and member of the Resource Board
- 2013 Chair of the Astronet Panel “High-energy, astro-particle astrophysics and gravitational waves”

**As a member of the Swift, Fermi and Agile collaborations she shared with her colleagues the Bruno Rossi Prize of the American Astronomical Society in 2007, 2011 and 2012.**

Since 1997, contract professor at the University of Pavia for Introduction to Astronomy

## **SCIENTIFIC ACHIEVEMENTS**

The scientific career of PAC now spans more than 30 years. It can be characterized by a first 10 y period dedicated mostly to data analysis and interpretation of gamma-ray astronomy (COS-B) and X-ray astronomy (Einstein, Exosat) data,. In the second decade, the field of interest widens to include the full range of observational multiwavelength astronomy with significant emphasis on optical observations and to include also interpretative work.

PAC took part from the start to the chase which lead to the discovery and understanding of Geminga through multiwavelength astronomy. This required the use of practically all means of space and ground based astronomy including space missions, such as SAS-2, HEAO-1, COS-B, Einstein, Exosat, Ginga, Rosat, Egret, EUVE, ASCA, HST and Hipparcos, and telescopes, such as the CFHT and ESO’s 3.6 and NTT.

The results on Geminga opened a new chapter in high-energy astrophysics: the study of unidentified  $\gamma$ -ray sources. This subject is now being pursued by several groups world-wide.

Later, she was awarded, either as a PI or as a CoI, a total of about 40 nights at ESO telescopes (VLT UT1, NTT, 3.6m, 2.2m) and about 30 orbits of HST.

These were mostly dedicated to the study of compact objects, generally in correlation with multiwavelength data. Of special interest in the optical field is the first ever correlation between Hipparcos, HST and ground based images of the Geminga counterpart.

The constant scientific theme is the phenomenology of galactic compact objects. Special attention is given to isolated neutron stars, their velocity distribution, their distances and their relations to supernova remnants.

The existing evidence for optical emission from isolated neutron stars is largely the work of her group. Using HST, she has secured absolute distance measurements of Geminga and the Vela pulsar.

In the last decade, PAC has further broadened her interests, to include work on instrument design and mission planning.

After the involvement on the Spectrometer Instrument of the Integral mission (in close collaboration with CNES), PAC took active part in the development of high energy missions such as the Italian mission AGILE, and the NASA missions SWIFT and GLAST, now known as Fermi. She was also involved in NGST, for which she led the science case for the industrial study on the 'On board data management', as well as in the EXIST phase A study.

Within the National Institute of Astrophysics (INAF), PAC is responsible for the exploitation of the Fermi data which are changing our view of the gamma-ray sky. Fermi has shown that a sizable fraction of previously unidentified galactic gamma-ray sources are indeed radio-quiet gamma-ray pulsars, similar to Geminga. PAC is also coordinating a joint SWIFT-FERMI programme aimed at the understanding of the still mysterious, unidentified  $\gamma$ -ray sources.

PAC is representing INAF within the CTA (Cherenkov Telescope Array) consortium.

Her list of publication can be seen at <http://www.iasf-milano.inaf.it/~pat/WEBpage/pat-pub.pdf>.

It features:

- 334 paper published on international referee journals
- 140 conference papers (several invited papers)
- >200 papers for the general public

As of today (18 feb. 2013) the citations are 18594 with an h>55

PAC has organized (either as main organizer or as member of the organizing committee) a number of conferences. She is often invited to give review lectures on topics ranging from the unidentified  $\gamma$ -ray sources to the multiwavelength behaviour of Isolated Neutron Stars.

PAC is active in science vulgarisation and she often lectures for the general public.

PAC is the reference point of a web site dedicated to high energy astrophysics

<http://www.iasf-milano.inaf.it/> selecting “divulgazione”

Since 1997 PAC is “professore a contratto” at the University of Pavia where she teaches “Introduction to astronomy”. She has been thesis adviser both for students working for their degree of Laurea and Dottorato (Italian PhD).

PAC is fluent in Italian, French and English