

Neutron Stars

The scientific career of Patrizia A. Caraveo (pat@iasf-milano.inaf.it, PAC hereafter) 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 (ESA's COS-B) and X-ray astronomy (NASA's Einstein, ESA's 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.

In the last decade, PAC has further broadened her interests, to include work on instrument design and mission planning, as well as managerial tasks at national and international level.

The constant scientific theme of PAC's contribution to science 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. **PAC is a recognized leader in the study of neutron stars behavior at different wavelengths**

In parallel, PAC took active part in the development of several high-energy missions, such as the Spectrometer Instrument of the Integral mission (in close collaboration with the French Space agency CNES), the Italian mission AGILE, and the NASA missions SWIFT and GLAST, now known as Fermi.

PAC is now the leader of the Italian participation to the Cherenkov Telescope Array (CTA), a project devoted to very high-energy astronomy from the ground, where Italy is one of the major partners.

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.

In recognition of her leading role in the study of the high-energy emission of isolated neutron stars, PAC was invited to write a review paper for Annual Review of Astronomy and Astrophysics. The paper, entitled **"Gamma-Ray Pulsar Revolution"**, appeared in September 2014.

Currently, PAC is Director of the Istituto di Astrofisica Spaziale e Fisica Cosmica in Milano, Professor of "Introduction to Astronomy" at the University of Pavia and Associate Editor of the *Journal of High Energy Astrophysics*.

PAC won the prize **Premio Nazionale Presidente della Repubblica** in 2009 and shared with her Swift, Fermi and Agile colleagues the **Bruno Rossi prize of the American Astronomical Society in 2007, 2011 and 2012**.

In 2014 she received the **Outstanding Achievement Award** from the Women in Aerospace European Society.

Her list of publication can be seen at <http://www.iasf-milano.inaf.it/~pat/WEBpage/pat-pub.pdf>. It features: 404 papers published on international referee journals, 147 conference papers (several invited papers), hundreds of papers for the general public.

Her impact factor is very high. ADS, the system widely used by the astronomical community, quotes an h index >90, with more than 33.000 citations.

Indeed, in 2014 PAC has been included by Thomson Reuters in the list of **Highly Cited Researchers** for Space Science.

More info at <http://www.iasf-milano.inaf.it/~pat/personal.html>

References:

- **P. A. Caraveo**, G.F. Bignami, R. Mignani, L. Taff
Parallax Observations with the Hubble Space Telescope Yield the Distance to Geminga
Ap.J. Lett. 461,L91
- P.A. Caraveo, G.F. Bignami, A. DeLuca, S.Mereghetti, A. Pellizzoni, R. Mignani, A. Tur, W.Becker
Geminga's Tails : a Pulsar Bow-Shock Probing the Interstellar Medium
Science **301**,1345
- **P. A. Caraveo**, et al
Phase-Resolved Spectroscopy of Geminga Shows Rotating Hot Spot(s)
Science, vol. 305, 376-380
- M. Tavani, A. Bulgarelli, V. Vittorini, A. Pellizzoni, E. Striani, P.A. **Caraveo**, M.C. Weisskopf, A. Tennant, G. Pucella, A. Trois, et al.
Discovery of Powerful Gamma-Ray Flares from the Crab Nebula
Science, 331, 736
- P.A. Caraveo
Gamma-Ray pulsar revolution
Ann. Rev Astron Astrophys. 52, 211
<http://www.annualreviews.org/doi/full/10.1146/annurev-astro-081913-035948>