

Biography and bibliography



Professor Maria Assumpció Català Poch (1925–2009)

In 2009, the Autonomous Government of Catalonia awarded Maria Assumpció Català Poch the Cross of St. George, in recognition for her lifelong scientific and academic work in Catalan universities. Dr. Català, who died in that same year, loved mathematics and astronomy and had a strong and active career as a researcher and in teaching. In one of her last public speeches [1], she mentioned her passion for astronomy, born in her childhood:

“Studying Astronomy has granted me personal realization. My affection for this science started very early in my life, when the brother of my grandfather, Geography Professor in the *Escuela Normal de Magisterio*, would take us out to the mountains and would show us how to tell the time by observing the shadow of a tree, to locate the cardinal points, and so on. Later on, while at high school, he would come to me with astronomical and philosophical problems which I had to try and solve for him.

I would like to emphasize that not only have I enjoyed the study of astronomy as applied mathematics, but also the ability to transmit my knowledge. My dedication to teaching has sometimes conflicted with my dedication to research, but I believe that my time has been well-invested”.

Dr. Català started her astronomy work in 1952, a time of economic recession in Spain and also of the nearly complete absence of women in its universities. In fact, she was the first woman to become an astronomer in the Spanish universities of Spain. During a period of over 30 years, she investigated solar spots and performed calculations of orbits and eclipses, in addition to authoring many university textbooks and studies on the history of science, particularly the history of astronomy. She also worked on the popularization of astronomy, a task that continued to engage her until the time of her death. Also, for 15 years, she was the Spanish representative to Commission 46 of the International Astronomy Union, whose mission is to promote the teaching of astronomy.

Even after she retired, she never lost contact with the astronomy and university communities, participating in the biannual meetings of the Spanish Society of Astronomy and in the Christmas get-togethers hosted by the Physics Faculty of the University of Barcelona. One of the last events she attended, was the ceremony in which Margaret Geller was honored with the Doctor Honoris Causa award by Rovira i Virgili University. The photograph of Dr. Català is from that awards ceremony [2].

Shortly before her death, Dr. Català shared her experience as a woman astronomer, during an interview in the documentary program “Women in the stars,” produced within the framework of the International Year of Astronomy 2009, as part of the series “She is an astronomer” [3].

Roser Puig. Department of Semitic (Arab) Philology, University of Barcelona (UB). E-mail: roserpuig@ub.edu

Carme Jordi. Department of Astronomy and Meteorology, Faculty of Physics, University of Barcelona (UB). E-mail: carme@am.ub.es

A brief biography

Maria Assumpció Català Poch was born in Barcelona on July 14, 1925. In the early years of her childhood, the family lived in Montblanc, Tarragona, where her father worked. She began primary school in Montblanc but finished in Barcelona, at the Catholic school of the Sacred Heart and Mary Immaculate, operated by the sisters of St Paul. After the Spanish civil war, she attended high school at the Institut Maragall in Barcelona.

From 1947 to 1952, she worked towards a bachelor's degree in science at the University of Barcelona's Mathematics Section, where she also did her doctoral studies and began to write her doctoral thesis. Following a family tradition, she took the public exams to qualify for secondary school teaching in mathematics. She was then hired by the secondary school Infanta Isabel de Aragón, in Barcelona, where she taught from 1963 to 1975. In 1971, she published her doctoral thesis, "Contributions to the study of the dynamics of stellar systems under cylindrical symmetry," and prepared for the public exams to become adjunct teacher of astronomy at the University of Barcelona. In 1975, she passed the exams and began her teaching career at the University of Barcelona, where she remained until her retirement, at the age of 65 (as mandated by the law), on September 30, 1990. In 2004, the university named her Professor Emeritus.

University teaching career

Dr. Català's teaching career at the University of Barcelona actually began while attending courses needed for her doctorate. Between 1952 and 1970, she taught Mathematics, General Astronomy and Topography, Spherical Astronomy and Geodesy, Rational Mechanics and Topic in Celestial Mechanics, Special Mathematics, and Mathematics for Chemistry in the university's Science Faculty. From 1965 to 1967, she also taught Mathematics in the Pharmacy Faculty.

In the period between 1957 and 1958 and also between 1968 and 1971, she coordinated the teaching at her department in the Science Faculty; from 1960 to 1974, she was adjunct professor in the same faculty and in the academic year of 1974–1975 in the Physics Faculty.

Beginning in 1975 and until 1990, when she retired, she taught Astronomy, Astrophysics, and Geophysics in the Physics Faculty of the university. She also taught Geodesy after the subject was restarted at the Astronomy Department, and as a consequence in 1990 she started her collaboration with the Cartography Institute of Catalonia. Between 1971 and 1980, she took part in the Space Technology Courses at the Technical University of Catalonia, teaching Astrodynamics and Celestial Mechanics. While teaching at the universities, she also participated in several courses and seminars on comets, astrodynamics, celestial mechanics, stellar systems, and galactic dynamics, and attended meetings aimed at the popularization of science.

Throughout her teaching life, she produced a large amount of study material, such as problem books and class notes. One

publication that stands out is *Apuntes de Astronomía* (Astronomy notes), written together with Dr. Orús. This book has been used in Spain by several generations of astronomers and is still used, for example, in the school at the Armada Observatory.

Scientific research

Dr. Català started work as a researcher in 1954, with a grant from the Spanish National Research Council (CSIC), in the areas of positional astronomy and orbital calculations of comets. Also, at the Astronomy Observatory of the University of Barcelona, in collaboration with the National Astronomical Observatory, she worked in the areas of observational astronomy and orbital calculations, while carrying out daily observations of solar spots. In 1957, she was named assistant of the Astronomy Section in the Mathematics Seminar of Barcelona, run by the Alfonso el Sabio Board of Trustees of the CSIC. She held this post until the dissolution of the section in 1969.

A lesser known period in the research career of Dr. Català covers the years 1965 to 1966, when she served as adjunct research collaborator at the History Faculty of the University of Barcelona, in the History of Science Department, specializing in Arabic Astronomy. From 1966 to 1970, she taught the course History of Arab Science in the university's Philosophy Faculty. Together with Dr. Joan Vernet, professor of the Department of Arabic language in the same Faculty, she wrote a series of articles on Arabic science. *Las obras matemáticas de Maslama de Madrid* (1965), *Arquímedes árabe: el tratado de los círculos tangentes* (1968) and *Dos tratados del Arquímedes árabe: tratado de los círculos tangentes y el libro de los triángulos* (1971). In that same year, she also collaborated with a young Dr. Julio Samsó, publishing the article *Un instrumento astronómico de raigambre zarqali: el cuadrante shakkāzi de Ibn Tibugā*. Her work as an advisor in the field of Arabic Astronomy extended her teachings to later generations of historians of Arabic science and culture.

In 1978, she was the recipient of a grant for the promotion of university-based research (Fomento de la Investigación en la Universidad), which funded her work in positional astronomy, specifically, eclipse, occultations and transit calculations, stellar systems dynamics, and galactic dynamics. This was an area of research she had already started as part of her doctoral thesis but which she later continued on her own. In 1976 and 1979, she worked in the Stellar Dynamics and Statistics Laboratory in the Institut Henri-Poincaré, as part of the Hispano-French Scientific Cooperation Program, and also at the Observatoire de Meudon, where she studied the structure of the Oort comet cloud.

Throughout her research career, she participated in many projects funded by the Spanish government, serving either as principal investigator or as a collaborator. She also played a major role in European Space Agency project "Selection and determination of stellar and planetary positions using Hipparcos satellite." The results of her broad-ranging research have also been published in dozens of international congresses.

Throughout her research career, Dr. Català combined observation with theory, observing, for over 30 years, solar activity and measuring solar spots, comets, and star occultations by

the Moon. In addition, the value of her academic career is evidenced by the fact that she supervised 11 degree theses and seven doctoral theses.

Scientific societies

Dr. Català was member of many scientific societies. She became member of the International Astronomy Union in 1976 and was a member of its Commission 46 for 15 years, until 1994. She was also a member of the European Astronomical Society since its foundation in 1990, and honorary member of the Spanish Society of Astronomy since its foundation in 1994.

In 1978, she entered the Science History Research Group and in 1985 the Millàs Vallicosa Institute of Arab Science. She served as a partner of the Catalan Mathematics Society and of the Catalan Society of History of Science and Technology, both affiliated with the Institute for Catalan Studies, and was a member of the Catalan Society of Gnomonics.

She was a member of the Astronomy Teaching Commission, created in 1983 by the *Direcció General de Batxillerat* and promoted by the Earth and Cosmological Physics Department of the University of Barcelona, and was a member of the Permanent Astronomy Seminar at the Education Science Institute (ICE) of the Polytechnical University of Catalunya since its inception in 1984. Her work on medieval science can be found on the Hispanic Medievalism index (1955–1970) in the Medieval Studies Department of the CSIC.

In 1997, she became a scientific advisor to the Astronomy Section of the Spanish edition of *National Geographic*, published by Ediciones RBA, Barcelona.

Publications by Maria Assumpció Català Poch

The following bibliography contains the titles of books and scientific articles written by Dr. Català. As a teacher, she contributed to translations, reviews, and articles for newspapers, journals, and other publications; these are also listed below.

Books

1. Català MA (1971) Contribución al estudio de la Dinámica de los Sistemas Estelares a Simetría Cilíndrica. Servicio de Publicaciones de la Universidad de Barcelona (resumen de tesis doctoral), Barcelona
2. Català MA, Nahon F (1981) Colisiones binarias en el problema restringido de los tres cuerpos. Servicio de Publicaciones de la Universidad de Barcelona, Barcelona
3. Català MA (1972) Astrodinámica. Cátedra Especial de Tecnologías del Espacio (CETE), Universidad Politécnica de Catalunya, Barcelona
4. Català MA (1978) Astronomía. Agrupación Astronáutica Española, Barcelona
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6. Català MA (1984) Introducción a la Astronomía (Guía para profesores de BUP). Servicio de Publicaciones de la Universidad de Barcelona, Barcelona

7. Català MA (1984) Introducción a la Astronomía (Guía para profesores de BUP) Anexo I. Servicio de Publicaciones de la Universidad de Barcelona, Barcelona
8. Català MA (1984) Elementos de Astrodinámica. Agrupación Astronáutica Española, Barcelona
9. Català MA (1986) Curso de introducción a la Astronomía y Astrofísica (Astronomía). Escuela Técnica Superior de Ingenieros de Telecomunicación, Universidad Politécnica de Catalunya, Barcelona
10. Català MA, Orús JJ (1987) Apuntes de Astronomía. Tomo I. Cátedra de Astronomía, Universidad de Barcelona, Barcelona
11. Català MA, Orús JJ (1995) Apuntes de Astronomía. Tomo II. Cátedra de Astronomía, Universidad de Barcelona, Barcelona
12. Català MA, Orús JJ, Núñez J (2007) Astronomía esférica y mecánica celeste. Publicacions i edicions de la Universitat de Barcelona, Barcelona

Scientific papers

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30. Català MA (1981) Clasificación de las galaxias atendiendo a la forma que presenta la curva velocidad-distancia. Actas de la III Asamblea Nacional de Astronomía y Astrofísica, Almería, 29 September–4 October 1980, pp 863-870
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Degree and doctoral theses supervised

Degree theses

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2. Rosselló Nicolau G (1976) Determinación de coordenadas geodésicas mediante observación de ocultaciones de estrellas por la Luna
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4. Durán Roca J (1979) Determinación de las constantes instrumentales del telescopio ecuatorial de la Cátedra de Astronomía
5. Salas García A (1980) Proceso previo a la observación de satélites artificiales por telemetría láser
6. Calaf Zayas J (1982) Método operativo para determinar las correcciones al equinoccio y al ecuador de un catálogo fundamental a partir de observaciones de pequeños planetas.
7. Martín Díaz C (1983) Mejora en el seguimiento láser de satélites artificiales y filtrado de ecos
8. Cadefau Surroca T (1984) Contribución al estudio de la estructura de la Nube de Oort
9. Sanz Subirana J (1984) Sistemas estelares a simetría axial.

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11. Boloix Carlos-Roca R (1985) Tiempo y frecuencia
6. Cadefau Surroca T (1994) Estudi de l'estructura del núvol d'Oort de cometes
7. Alcobé López S (2001) Contribución al estudio de la Dinámica Galáctica: superposición de Sistemas Estelares

Doctoral theses

1. Rosselló Nicolau G (1981) Corrección de las constantes fundamentales a partir de la observación de ocultaciones de estrellas por la Luna
2. Carandell Robusté J (1986) Estudio sobre el tratado de gnomónica de Ibn al-Raqqām
3. Sanz Subirana J (1987) Contribución al estudio de la Dinámica de los Sistemas Estelares a simetría axial
4. Calaf Zayas J (1987) Cálculo de efemérides y corrección de elementos orbitales de pequeños planetas
5. Juan Zornoza M (1993) Sistemas estelares a simetría axial

Notes

- [1] We would like to thank Maria Cinta Català and Carme Català, sisters of Maria Assumpció, for the documentation provided for this article.
- [2] Our gratitude to Rovira i Virgili University for permission to publish the photograph.
- [3] This documentary, produced by the UNED, can be found at [<http://tinyurl.com/yk89v2q>]