

Palis Awarded Balzan Prize



Jacob Palis

JACOB PALIS of the Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil, has been awarded the International Balzan Prize for his “fundamental contributions to the mathematical theory of dynamical systems”. The Balzan Prizes are awarded to scholars, artists, and scientists who have distinguished themselves in their fields on an international level. The cash prize is 750,000 Swiss francs (approximately US\$740,000). Palis will receive the prize from the president of the Italian Republic during a ceremony to be held in Rome on November 19, 2010.

The Work of Jacob Palis

The Balzan Foundation provided the following information about the work of Jacob Palis.

The theory of dynamical systems was originated by the great mathematician H. Poincaré as a qualitative study of differential equations. For more than forty years Jacob Palis has made outstanding contributions to this area of mathematics. Soon after finishing his Ph.D. Palis became one of the most important contributors to a program that aimed at describing almost all dynamical systems.

In the 1970s, following in the wake of Smale, Palis was one of the major figures in developing the theory of hyperbolic dynamics and structural stability. At the beginning of the 1980s he initiated, with Newhouse and Takens, what has become one of the most active fields in dynamics: the interplay between homoclinic and heteroclinic bifurcations and chaos. One of his most important contributions was to reveal, in this context, the fundamental role played by fractal dimensions in connection with the frequency of dynamical bifurcations.

Beyond these remarkable achievements, Jacob Palis recently proposed a comprehensive set of conjectures that together form an ambitious

program to understand the typical behavior of dynamical systems and, in particular, chaotic systems. This program is currently generating immense scientific activity. Recently, in conjunction with Jean-Christophe Yoccoz, Palis has been studying the formation of “nonuniformly hyperbolic horseshoes” in the unfolding of homoclinic and heteroclinic tangencies.

Not only has Jacob Palis made lasting and influential contributions to mathematics, but also his record as an advisor is impressive, having significantly influenced at least two generations of mathematicians. Thus he is recognized as the father of the Latin American school of mathematics in dynamical systems and one of the most important scientific personalities on the continent.

Biographical Sketch

Jacob Palis was born in Uberaba, Minas Gerais, Brazil, on March 15, 1940, and is a Brazilian citizen. He was educated at the Federal University of Rio de Janeiro and at the University of California at Berkeley, where he earned his M.Sc. in 1966 and his Ph.D. in 1967. In 1973 he held a Guggenheim Foundation postdoctoral fellowship at the University of California at Berkeley. He has been full professor at the Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil, since 1971. He is currently president of the Academy of Sciences for the Developing World (TWAS) and president of the Brazilian Academy of Sciences.

Other prizes he has received include the Prize of the Academy of Sciences for the Developing World (TWAS) (1988), the National Prize for Science and Technology of Brazil (1990), the InterAmerican Prize for Science of the Organization of the American States (1995), and the Trieste Science Prize in Mathematics (2006).

He is a member of many professional societies, including the Brazilian Academy of Sciences,

the Indian Academy of Sciences, the Indian National Science Academy, the Chilean Academy of Sciences, the European Academy of Sciences, the Norwegian Academy of Sciences, and the Russian Academy of Sciences. He is a foreign member of the U.S. National Academy of Sciences, the Mexican Academy of Sciences, the French Academy of Sciences, the German Academy of Sciences Leopoldina, and the Accademia Nazionale dei Lincei. In 1994 he was awarded the Brazilian Grand-Croix National Order of Scientific Merit, and in 2005 he received the French Légion d'Honneur. He holds honorary degrees from the State University of Rio de Janeiro, Brazil; the University of Chile; the University of Warwick, United Kingdom; the University of Santiago de Chile; the Universidad de la Habana, Cuba; and the Universidad de Ingeniería, Peru.

His editorial activities include numerous scientific journals: *Ergodic Theory and Dynamical Systems*, *Nonlinearity*, the *Bulletin of the Brazilian Mathematical Society*, *Annales de l'Institut Henri Poincaré*, *Acta Applicandae Mathematicae*, *Chaos—Nonlinear Science*, the *Chinese Annals of Mathematics*, *Communications in Contemporary Mathematics*, *Mathematics Applied in Science and Technology*, and the *Moscow Mathematical Journal*. He has also authored more than eighty papers in major journals.

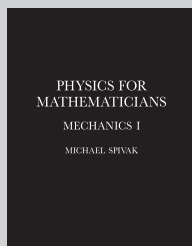
His research areas in mathematics are global stability of dynamical systems, bifurcations and fractal dimensions, and the global scenario for chaotic systems.

About the Prize

The International Eugenio Balzan Prize Foundation was established in 1956 by Lina Balzan, who had come into a considerable inheritance on the death of her father, Eugenio, and began the foundation to honor his memory. The aim of the International Balzan Prize Foundation is to promote culture, the sciences, and the most meritorious initiatives in the cause of humanity, peace, and brotherhood among peoples throughout the world. Currently, four annual awards are made: two in literature, moral sciences, and the arts; and two in the physical, mathematical, and natural sciences and medicine. The award fields vary each year and can be related to either a specific or an interdisciplinary field; they look to go beyond the traditional subjects, both in the humanities (literature, moral sciences, and the arts) and in the sciences (medicine and the physical, mathematical, and natural sciences). They give priority to innovative research. Half of the amount received by the winner of each of the four prizes must be destined for research work, preferably involving young scholars and researchers.

— From Balzan Foundation announcements

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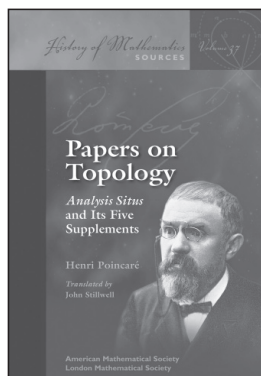
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