Curriculum Vitae Professor Dr Jacob Palis

Name: **Jacob Palis**

Date of birth: **15 March 1940**

Research Priorities: Stability of dynamical systems, bifurcations and fractal dimensions, differential equations, chaotic systems, Morse-Smale diffeomorphisms, metastability, attractors

Jacob Palis is a Brazilian mathematician. He has made significant contributions to the theory of dynamical systems, with which we come into daily contact in the form of markets, nervous systems, societies or ecosystems. He was able to demonstrate that dynamical systems can remain stable and retain their behaviour even under perturbation, which is a discovery of great importance for many areas of science.

Academic and Professional Career

1993 - 2003	Director, Instituto Nacional de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil
since 1971	Professor, IMPA, Rio de Janeiro, Brazil
1968 - 1971	Scientist, IMPA, Rio de Janeiro, Brazil
1967	Ph.D. in Philosophy, University of California (UC) Berkeley, Berkeley, USA
1966	M.Sc., University of California Berkeley, Berkeley, USA
1962	B.Sc. in Engineering, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

Functions in Scientific Societies and Committees

2010 - 2012	President, Academy of Sciences for the Developing World (TWAS) (today: The World Academy of Sciences)
2007 - 2009	President, TWAS

2007 - 2012	President, Brazilian Academy of Sciences, Brazil
2003 - 2010	Member, Scientific and Strategic Committee, Collège de France (COSS), France
	Coordinator, Study Panel, InterAcademy Partnership (IAP), TWAS
2005 - 2007	Chairperson, Scientific Board, International Centre for Theoretical Physics (ICTP)
2000 - 2006	Secretary General, TWAS and Secretary General, Brazilian Academy of Sciences, Brazil
1999 - 2002	President, Executive Committee, International Mathematical Union (IMU)
1995	Scientific Coordinator, Unión Matemática de América Latina y el Caribe (UMALCA)
1995	Founder and Chairperson, UMALCA
1993 - 2003	Director, IMPA, Rio de Janeiro, Brazil
1993 - 1996	Chairperson, Scientific Committee, ICTP
1993 - 1996	Vice President and Member, Supervisory Board, International Council for Science (ICS)
since 1993	Member, Scientific Committee, ICTP
1991 - 1998	Secretary General, Executive Committee, IMU
since 1990	Member, Scientific Advisory Board, Eidgenössische Technische Hochschule Zürich (ETH Zurich), Zurich, Switzerland
1983 - 1990	Member, Executive Committee, IMU

Project Coordination, Membership in Collaborative Research Projects

2010	Project "Non-Uniformly Hyperbolic Horseshoes Arising from Bifurcations of Poincaré Heteroclinic Cycles" (together with Jean-Christophe Yoccoz), Reseau Franco-Brésilien en Mathématics (GDRI-RFBM) (Brasilian-French Network for Mathematics), France and Brazil
2005	Co-Founder, Ramanujan Prize for Young Mathematicians from Developing Countries, International Centre for Theoretical Physics, Trieste, Italy
1999 - 2004	Founding and Board Member, Science Initiative Group, Institute for Advanced Study (IAS), Princeton, USA

Honours and Awarded Memberships

| 2013 | Solomon Lefschetz Medal, Mathematical Council of the Americas (MCofA) |
| since 2010 | Member, German National Academy of Sciences Leopoldina, Germany |

2010	Balzan Prize for Mathematics, Balzan Foundation, Milan, Italy
2008	International Prize for Mathematics, Accademia Nazionale dei Lincei, Italy
since 2006	Member, Russian Academy of Sciences, Russia
2006	Trieste Science Prize, Trieste, Italy
since 2005	Member, Norwegian Academy of Science and Letters (DNVA), Norway
since 2004	Member, European Academy of Sciences and Arts
2000	Premio México de Ciencia y Tecnología, Consejo Nacional de Ciencia y Tecnología (CONACYT), Mexico
since 1997	Member, Chilean Academy of Sciences, Chile
since 1996	Member, Indian National Science Academy (INAS), India
1995	InterAmerican Prize for Science, Organization of American States (OAS), USA
since 1992	Member, Latin American Academy of Sciences, Venezuela
since 1991	Member, World Academy of Sciences (TWAS)
1990	Almirante Álvaro Alberto Award, Brazilian National Council for Scientific and Technological Development (CNPq), Brazil
1976	Moinho Santista Prize, Brazil
1973	Postdoctoral Fellowship, John Simon Guggenheim Memorial Foundation, New York City, USA
since 1970	Member, Brazilian Academy of Sciences, Brazil
1965 - 1967	Scholarship, National Research Council of Brazil, Brazil
1962	Award "Best Graduate", University of Brazil, Sao Paulo, Brazil

Research Priorities

Jacob Palis is a Brazilian mathematician. He has made significant contributions to the theory of dynamical systems, with which we come into daily contact in the form of markets, nervous systems, societies or ecosystems. He was able to demonstrate that dynamical systems can remain stable and retain their behaviour even under perturbation, which is a discovery of great importance for many areas of science.

Jacob Palis paid particular attention to the stability of dynamical systems, which is closely tied to branches or bifurcations of possible changes. The number of their branches and possible states becomes infinite if one of the parameters changes too much. This means that the dynamical system has become "chaotic" and, as was long assumed, unpredictable. He used an unusual mathematical method to find order in the chaos. He depicted dynamical systems geometrically and was able to

demonstrate that chaotic systems, despite the unpredictability of individual events, generally follow certain geometrical rules and repetitive forms, such as doughnuts or curved ribbons. He showed that they can remain stable and retain their "normal" behaviour even in the event of smaller perturbations. This was a groundbreaking discovery. The theory of dynamical systems is now used not only in the fields of cognitive science, climate research, economic sciences and neurosciences but also to analyse models of prebiotic evolution. His theory of "hyperbolic dynamics" and "structural stability" describes virtually all dynamical systems.

In a variety of institutions, Jacob Palis has supported the development of young mathematical talents around the world, particularly in newly industrialised and developing countries. To this end, he developed the Ramanujan Prize for young mathematicians from developing countries (DST-ICTP-IMU Ramanujan Prize) and for several years he held the position of President of the Academy of Sciences for the Developing World (TWAS) today: World Academy of Sciences).