

## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Alberto Adrego Pinto, Universidade do Porto**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**One dimensional chaotic attractors**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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Celebrating Wellington de Melo's 70<sup>th</sup> birthday



## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, **Artur Avila**, Univ. Pierre et Marie Curie, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**TBA**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016

A handwritten signature in black ink that reads "Maria José Pacifico".

Maria José Pacifico  
Organizing Committee

Celebrating Wellington de Melo's 70<sup>th</sup> birthday



## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Björn Winckler**, **State University of New York at Stony Brook**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Topology determines geometry?**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Carlos Alberto Siqueira Lima**, Imperial College London, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Quasi-conformal deformations of solenoidal Julia sets and conformal IFS**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

We hereby certify that, **Charles Tresser, IBM - Tj Watson Research Center**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Some questions and a few results on the boundary of topological entropy”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, ***Daniel Smania Brandao***, **Inst. Ciên. Matemática e Comp. de São Carlos**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Multimodal renormalization with bounded combinatorics”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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We hereby certify that, ***Davoud Cheraghi***, Imperial College London, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**On a conjecture of Marmi, Moussa, and Yoccoz on the sizes of Siegel disks**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Edson de Faria, Instituto de Matemática e Estatística**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Quasi-symmetric rigidity of multi-critical circle maps**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Edson Vargas, Instituto de Matemática e Estatística**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Invariant measure for critical covering maps of the circle”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, **Eleonora Catsigeras, Universidad de la Republica**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Stochastic perturbations of piecewise continuous maps**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

We hereby certify that, **Ian Melbourne, University of Warwick**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**The Lorenz attractor is exponentially mixing**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Jorge Sotomayor**, Instituto de Matemática e Estatística, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Recurrent Curvature Lines on Euclidean Surfaces**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **José Ladislao Vieitez Barreiro**, **Facultad de Ingeniería y Agrimensura**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “Lyapunov exponents for expansive homeomorphisms and expansive set valued maps”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, ***Khanin, Konstantin***, **University of Toronto**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**On typical irrational rotation numbers for circle maps with singularities**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, **Liviana Palmisano**, Institute of Mathematics, Polish Academy of Sciences, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Foliations of Rigidity Classes”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Luciana Luna Anna Lomonaco**, Instituto de Matemática e Estatística, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Mating quadratic maps with the modular group**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Marco Lenci**, **Università di Bologna**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Uniformly expanding Markov maps of the real line: exactness and infinite mixing**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Marco Martens, State University of New York at Stony Brook**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Renormalization and Symmetry**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, **Michael Yampolsky, University of Toronto**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“New results on renormalization and rigidity of analytic critical circle maps”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, **Mikhail Lyubich**, **State University of New York at Stony Brook**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Pacman Renormalization and scaling of the Mandelbrot set at Siegel points**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

We hereby certify that, **Patrice Le Calvez, Univ. Pierre et Marie Curie**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Orbit forcing theory for surface homeomorphisms and applications**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Pedro Antonio Santoro Salomão**, Instituto de Matemática e Estatística, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Some periodic motions in Reeb dynamics which imply positive topological entropy**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

We hereby certify that, **Peter Hazard**, **Uppsala University**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Renormalisation of Henon-like mappings of bounded type**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
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We hereby certify that, **Raluca Tanase, State University of New York at Stony Brook**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Julia sets and discrete group actions**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

We hereby certify that, **Raúl Ures, Facultad de Ingeniería**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Ergodicity and Partial Hyperbolicity on Unit Tangent Bundles of Surfaces”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

IMPA, Rio de Janeiro, Brazil  
November 14 - 18, 2016

We hereby certify that, **Remus Radu**, **State University of New York at Stony Brook**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: “**Hedgehogs in higher dimensions and their applications**”.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

We hereby certify that, **Sebastian Van Strien, Imperial College London**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Wellington de Melo’s work from surface to one-dimensional dynamics”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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## CERTIFICATE

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We hereby certify that, **Sheldon Newhouse, Michigan State University**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“A generalization of a linearization theorem of Philip Hartman”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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We hereby certify that, **Smale Steve, University of California at Berkeley**, participated in the New Trends in Onedimensional Dynamics, held at Instituto Nacional de Matemática Pura e Aplicada - IMPA - Rio de Janeiro, from November 14<sup>th</sup> to 18<sup>th</sup>, 2016 and presented a plenary talk: **“Perspectives on the pitchfork bifurcation”**.

Rio de Janeiro, November 18<sup>th</sup>, 2016



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