CURRICULUM: MICHELA PROCESI

Born in Rome on 21-3-73,

05-1998 Graduated in Physics at University of Rome "La Sapienza" (Onde non-lineari, metodo multiscala ed integrabilità- with A. Degasperis)

07-02-2002 PhD in Mathematics University of Rome la Sapienza (Estimates on Hamiltonian splittings:Tree techniques in the theory of homoclinic splitting and Arnold diffusion for a-priori stable systems, with L. Chierchia).

Academic positions:
2007-2015 Researcher: first at Università di Napoli Federico II then at Università di Roma la Sapienza.

Sett. 2015- Oct. 2019 Associate Professor at Università di Roma Tre.

Since Nov. 2019 Full Professor at Università di Roma Tre.

Principal Investigator of the ERC project: Hamiltonian PDEs and small divisor problems: a dynamical systems approach. (ERC- Ideas Starting Grants FP7. Nov. 2012 -Oct. 2018)

Research interests:

My main interests are in nonlinear analysis and dynamical systems.

My first results were on integrable systems and particularly on an integrability test, which allowed us to find a (at that time) new integrable equation (the Deagasperis-Procesi eq.) which has attracted some interest in hydrodynamics. In my PhD thesis I have studied problems of homoclinic splitting and Arnold diffusion. At the moment my main intersts are small divisor problems, partcularly the construction of recursive (quasi and almost-periodic) solutions for dynamical systems and PDEs. I have also worked on normal form problems- with applications to both stability and instability problems- and reducibility for PDEs on tori.

Invited speaker at various international conferences among which:

-SPT , Roma 1997

-Integrable Systems, Cuernavaca (Mx) 9-16 nov. '04

-Dynamics Days Europe, Loughborough (UK) 9-13 luglio 2007.
-Renormalization in dynamical systems Inst. Erwin Schrödinger Vienna october 2007.
-Summer School Hamiltonian PDE's and Variational Methods, CAPRI, Villa Orlandi 8-12 sept. 2008:
-Indam-ERC intensive period: New connections between dynamical systems and Hamiltonian PDEs NAPOLI, April 1- June 6, 2009
-Workshop on "New connections between dynamical systems and Hamiltonian PDEs", Capri October 15-16 2010
-Workshop KAM theory and Cauchy problems for PDEs, 23-27 may 2011.
-Integrability and Physics, Conference in honour of Antonio Degasperis 70's birthday, La Sapienza, Rome, 25/03/2011.
-Mechanics: classical, statistical and quantum (in honor of the 70th birthday of Giovanni Gallavotti), La Sapienza, Rome, 2-5/07/2012.
-Nonlinear Hamiltonian PDEs, Ascona, July 1 - 6, 2012
- Hamiltonian and Dispersive Equations CIRM Luminy 24-28 july 2013.

- Multiscale methods in Small Divisor problems. Maiori 16-20 Sept. 2013.
- "16th General Meeting of the European Women in Mathematics", Bonn (Germany), Sept. 2013-Plenary speaker.
-Geometric and Analytic Aspects of Integrable and nearly-Integrable Hamiltonian Systems   , University of Milano-Bicocca (Italy), June 2014
- Dynamics and PDEs, Cargese (Corsica, France) 11-14 November 2014.
- KAM and Dispersive Methods in PDEs, Milano (Italy) 1-5 December 2014.
- Two-day meeting in honor of Antonio Ambrosetti, Venezia (Italy) 14-15 December 2014.
- The Conference on Hamiltonian Dynamical Systems, Fudan University in Shanghai (China), 4-10 January 2015.
- "Sixth Itinerant Meeting in PDEs" Trieste, 14-16 January 2015.
- Summer school "Normal forms and large time behavior for nonlinear PDE", Nantes (France), June 2015.
- Dynamics of Evolution Equations, CIRM -Luminy (France) March 21-25, 2016
- Dynamical Systems, Differential Equations and Applications Orlando July 1-5, 2016.
-Summer School Nonlinear Waves, IHES Paris (France) 18-29 July 2016,
 -Dynamics and PDEs, Saint Etienne de Tinée (France), Feb. 2017.
- Conference on Hamiltonian Systems, Ascona (CH), Oct. 2017
- Workshop "dynamics of hamiltonian PDEs" La Thuile, Feb 2018
- Workshop "Variational Methods in analysis, geometry and physics" Pisa, Feb 2018
- Interactions between Dynamical Systems and Partial Differential Equations, Barcellona June 2018
-Workshop on Quasi-periodic Dynamics and Schrödinger operators Nanjing 3-7 Set. 2018
-"LEANING TORI" An Hamiltonian Event under the Tower, Pisa May 2019
-From semi-classical to quantum many body through normal forms, *Milano, Dec. 2019*

Organizing activities:
Summer School Hamiltonian PDE's and Variational Methods, CAPRI, Villa Orlandi 8-12 september 2008. Indam-ERC intensive period: New connections between dynamical systems and Hamiltonian PDEs NAPOLI, April 1- June 6, 2009
Workshop on "New connections between dynamical systems and Hamiltonian PDEs", October 15-16 2010. Workshop on "KAM and Cauchy Theory for PDEs", June 4-7 2012 Workshop on

School and Workshop "New perspectives in nonlinear PDEs", September 17-29 2012, Multiscale methods in Small Divisor problems. Maiori 16-20 Sept. 2013 , Roman Summer School and Workshop KAM theory and Dispersive PDEs Roma 1-11 Sept. 2014. Hamiltonian Dynamics PDEs and Waves on the Amalfi coast, Maiori 5-11 Sept. 2016, "Analysis and Dynamics, in occasion of Luigi Chierchia's 60th birthday" Patù, 12-15 oct. 2017.

Selected publications:

 A. Degasperis, M. Procesi: Asymptotic Integrability, in Proceedings of the International Workshop on Symmetry and Perturbation Theory SPT98, A.Degasperis, G. Gaeta ed. World Scientic Press pp. 23-37.

G. Gentile, M. Procesi: Periodic solutions for a class of nonlinear partial differential equations in higher dimension. Comm. Math. Phys. vol. 289; pp. 863-906 (2009)

M. Berti, P. Bolle, M. Procesi: An abstract Nash Moser theorem with applications to non linear PDEs Annales Inst. Poincare vol. 27; (2010) pp. 377-399.

M. Berti, M. Procesi: Nonlinear wave equations on Compact Lie groups and homogeneous manifolds. Duke Math. J. Vol. 159, n. 3 (2011), p. 479-538.

M. Berti, L. Biasco, M. Procesi: KAM for the reversible derivative wave equation, Archive for Rational Mechanics and Analysis Volume 212, Issue 3 (2014), Page 905-955

M. Berti, L. Corsi, M. Procesi: An abstract Nash-Moser theorem and quasi-periodic solutions for NLW and NLS on compact Lie groups and homogeneous spaces, Comm. Math. Phys. 334 (2015) n.3 pp. 1413-1454

M. Procesi, C. Procesi: A KAM algorithm for the resonant non-linear Schroedinger equation . Advances in math. (2015), pp. 399-470

M. Guardia, E. Haus, M. Procesi: Growth of Sobolev norms for the defocusing analytic NLS on T^2. Advances in Math. 301 (2016), 615–692.

E. Haus, M. Procesi: KAM for beating solutions of the quintic NLS, Comm. Math. Phys. 354 (2017) 3. pp 1101–1132

 L. Biasco, J. Massetti, M. Procesi: An Abstract Birkhoff Normal Form Theorem and Expolential Type Stability of the 1d NLS. Comm. Math. Phys. 375(3), pp. 2089-2153

R. Feola, F. Giuliani, M. Procesi: Quasi periodic solutions for Hamiltonian perturbations of the Degasperis-Procesi equation. Comm. Math. Phys. 377(3), pp. 1681-1759

M. Guardia, Z. Hani, E. Haus, A. Maspero, M. Procesi: Instability of finite gap solutions for the NLS on T^2 To appear on JEMS

Referee for various journals among which: Annals of Math, Inventiones, Comm. Math. Phys., Ann. Inst. H. Poincaré, Comm. Pure and Applied Math., Nonlinearity ...