Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Adrian Constantin

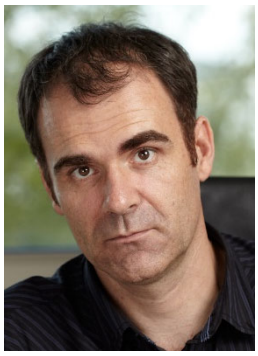

Image: Adrian Constantin

Name: **Adrian Constantin**
Date of birth: **22 April 1970**

Research Priorities: Differential equations, fluid mechanics, oceanography, atmospheric research

Adrian Constantin is an Austrian-Romanian-Swedish mathematician. His research focus is in differential equations which describe space- and time-dependent physical systems. He develops new mathematical methods which provide better insights into the dynamics of waves and currents in water and in the atmosphere. He mainly investigates non-linear phenomena in which the proportionality between cause and effect ceases to apply, often leading to fascinating outcomes.

Academic and Professional Career

since 2008	Professorial Chair of Partial Differential Equations, University of Vienna, Vienna, Austria
2011 - 2014	Professorial Chair of Analysis, King's College London, London, UK
2004 - 2008	Erasmus Smith's Chair of Mathematics (1762), Trinity College Dublin, Dublin, Ireland
2004	Visiting Professor, Brown University, Providence, USA
2000 - 2008	Professorial Chair of Mathematics, Lund University, Lund, Sweden
2000	Lecturer, Applied Mathematics, University of Newcastle, Newcastle, UK
1999	Habilitation in Mathematics, University of Zurich, Zurich, Switzerland
1998 - 1999	Senior Research and Teaching Associate, University of Zurich, Zurich, Switzerland
1996 - 1998	Research and Teaching Associate, University of Basel, Basel, Switzerland
1996	PhD in Mathematics, Courant Institute of Mathematical Sciences, New York University, New York City, USA

1992 Diplôme d'études approfondies in Mathematics, Université de Nice Sophia-Antipolis, Nice, France

1991 Maîtrise de mathématiques pures in Mathematics, Université de Nice Sophia-Antipolis, Nice, France

Functions in Scientific Societies and Committees

since 2015 Co-Editor-in-Chief, Journal of Differential Equations

since 2015 Editor, Annali di Matematica Pura ed Applicata

since 2012 Editor-in-Chief, Monatshefte für Mathematik

since 2011 Member, Kollegium (Scientific Governing Board), Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria

since 2011 Editor, Journal of Mathematical Fluid Mechanics

since 2011 Editor, Quarterly of Applied Mathematics

since 2010 Editor, Discrete and Continuous Dynamical Systems

Project Coordination, Membership in Collaborative Research Projects

2021 - 2026 Project “Theory and applications of nonlinear partial differential equations”, Wittgenstein Award, Austrian Science Fund (FWF), Austria

2017 - 2021 Project “Equatorial wave-current interactions”, Vienna Science and Technology Fund (WWTF), Vienna, Austria

2011 - 2016 Advanced Grant “Nonlinear studies of water flows with vorticity”, European Research Council

2010 - 2015 Project “Lagrangian kinematics of water waves”, FWF, Austria

2009 - 2013 Project “The flow beneath a surface water wave”, WWTF, Austria

2007 - 2008 Project “Modelling tsunamis”, Science Foundation Ireland (SFI), Ireland

2004 - 2007 Project “Mathematical studies of water wave phenomena”, SFI, Ireland

2004 - 2006 Project “Mathematical studies of water waves”, The Swedish Research Council (VR), Sweden

Honours and Awarded Memberships

since 2022 Member, German National Academy of Sciences Leopoldina, Germany

since 2022 Corresponding Member, Austrian Academy of Sciences, Austria

2020	Wittgenstein-Prize, Austrian Science Fund (FWF), Austria
2019	ISI-Web of Science Highly Cited Researcher (Cross-Field)
2012	Plenary Speaker, 6th European Congress of Mathematics
2010 - 2018	ISI-Web of Science Highly Cited Researcher (Mathematics)
2007	Friedrich Wilhelm Bessel Research Prize, Alexander von Humboldt Foundation, Germany
2005	Göran-Gustafsson-Prize, Royal Swedish Academy of Sciences, Sweden
1994	Benedetto Sciarra Prize, Scuola Normale Superiore di Pisa, Pisa, Italy

Research Priorities

Adrian Constantin is an Austrian-Romanian-Swedish mathematician. His research focus is in differential equations which describe space- and time-dependent physical systems. He develops new mathematical methods which provide better insights into the dynamics of waves and currents in water and in the atmosphere. He mainly investigates non-linear phenomena in which the proportionality between cause and effect ceases to apply, often leading to fascinating outcomes.

Constantin refines known mathematical methods and develops new mathematical approaches. Data collection is a crucial part of modern investigations into natural phenomena and while the processing of available data by means of automated machines is very helpful, even the best computer simulations can only produce correlations. However, theoretical investigations, strongly mathematical in nature, enable a successful search for causalities, upon which reliable predictions can be made. Nonlinear phenomena and processes are essentially determined by non-proportional dependencies and interactions of the relevant physical variables. The insights into their dynamics strongly depend on the discovery of specific structures. These can open up unexpected possibilities, in which the mathematical pursuit of accuracy, consistency and systematisation often facilitates elegant syntheses which reveal hidden mechanisms and enable a deeper understanding.

Adrian Constantin has made essential contributions to the theory of nonlinear waves, above all in regard to the dynamics of nonlinear water waves and the interaction between waves and currents in the ocean and in the atmosphere. In his investigations he combines methods from various fields of mathematics, such as partial and ordinary differential equations, complex and harmonic analysis, functional analysis, topology, differential and symplectic geometry, asymptotic analysis, variation calculation, and representation theory.