Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Prof. Dr. Camillo De Lellis

Image: Marita Fuchs

Name: **Camillo De Lellis**
Born: **11 June 1976**

Research Priorities: Calculus of variations, partial differential equations, geometric measure theory, incompressible fluid dynamics

Camillo De Lellis is an Italian-Swiss mathematician, whose main fields of research are the calculus of variations and the equations of incompressible fluid dynamics.

Academic and Professional Career

since 2019	IMB von Neumann Professor, Institute for Advanced Study, Princeton, USA
2018 - 2019	Professor, Institute for Advanced Study (IAS), Princeton, USA
2005 - 2018	Professor, University of Zurich (UZH), Zurich, Switzerland
2004 - 2005	Assistant Professor, University of Zurich (UZH), Zurich, Switzerland
2003 - 2004	Postdoctoral Fellow, Swiss Federal Institute of Technology Zurich (ETH), Zurich, Switzerland
2002	Postdoctoral Fellow, Max Planck Institute for Mathematics in the Sciences (MiS), Leipzig, Germany
2002	PhD in Mathematics, Scuola Normale Superiore (SNS), Pisa, Italy
2000	Diploma in Mathematics, Scuola Normale Superiore (SNS), Pisa, Italy
1995 - 1999	Degree in Mathematics, Scuola Normale Superiore (SNS), Pisa, Italy

Project Coordination, Membership in Collaborative Research Projects

2012 - 2017	Principal Investigator, project “Regularity theory for area minimizing currents”, European Research Council (ERC)
2009 - 2012	Head, subproject “Topology of partitioning surfaces (A03)”, Transregio (TRR) 71, German Research Foundation (DFG)
2009 - 2012	Head, subproject “Min-Max-constructions of minimal surfaces (A04)”, Transregio (TRR) 71, German Research Foundation (DFG)
2009 - 2012	Head, subproject “The Euler equations as a differential inclusion (C04)”, Transregio (TRR) 71, German Research Foundation (DFG)
since 2019	Principal Investigator, Focused Research Groups (FRG) “New Challenges in Geometric Measure”, University of Texas, Austin, USA
since 2019	Co-Principal Investigator, Grant DMS-1854147, Focused Research Groups (FRG) “New Challenges in Geometric Measure”, Princeton University, Princeton, USA

Honours and Awarded Memberships

2022	Maryam Mirzakhani Prize in Mathematics, National Academy of Sciences, USA
2022	Plenary Speaker, International Congress of Mathematicians (ICM), St. Petersburg, Russia
since 2021	Member, German National Academy of Sciences Leopoldina
2021	Feltrinelli Prize in Mathematics, Mechanics and Applications, Accademia Nazionale dei Lincei, Italy
2020	Bôcher Memorial Prize, American Mathematical Society (AMS), USA
since 2016	Member, Academia Europaea
2015	Amerio Prize, Académie des sciences et des lettres de l'institut lombard, Italy
2014	Caccioppoli Prize, Italian Mathematical Union (UMI), Italy
2013	Fermat Prize (together with Martin Hairer), Toulouse Mathematics Institute, University of Toulouse, Toulouse, France
2013	SIAM Activity Group on Analysis of Partial Differential Equations (SIAG/APDE) Prize (together with László Székelyhidi), Society for Industrial and Applied Mathematics (SIAM), Philadelphia, USA
2012	Plenary Speaker, European Congress of Mathematics (ECM), Kraków, Poland
2010	Guest Speaker, International Congress of Mathematicians (ICM), Hyderabad, India
2009	Stampacchia Gold Medal, Italian Mathematical Union (UMI), Italy

2000 Benedetto Sciarra Prize for Laurea Theses in Mathematics, Scuola Normale Superiore (SNS), Pisa, Italy

Research Priorities

Camillo De Lellis is an Italian-Swiss mathematician, whose main fields of research are the calculus of variations and the equations of incompressible fluid dynamics.

In the calculus of variations, one seeks the solution of a minimum problem, for instance a shape that optimizes a certain feature. A prominent example is named after the Belgian nineteenth-century physicist Joseph Plateau, who proposed to study area-minimizing surfaces, namely surfaces which minimize their area among those which span a fixed contour. It has long been known that such surfaces might have singularities, for instance, the formation of a certain type of corners, but a complete description of the type and size of the singularities is a long-standing open problem. A large proportion of Camillo De Lellis' research is dedicated to describing and understanding the specific nature of the singularities of such surfaces.

The first system of partial differential equations ever written down in fluid dynamics is given by the Euler equations which were found more than 250 years ago. The incompressible Euler equations are a limiting case of another well-known system, the Navier-Stokes equations. Whether regular solutions of the Euler and Navier-Stokes equations might form singularities in finite time is one of the biggest open problems in mathematics: for the Navier-Stokes equations, it is one of the famous millennium prize problems. Together with Hungarian mathematician László Székelyhidi, Jr., Camillo De Lellis has shown that there are very irregular solutions, many more than expected, and that they might behave in a very surprising way. Their new approach borrows from the pioneering work of 1950s American mathematician John Nash on the isometric embedding problem, a thus far completely unrelated topic in differential geometry, another branch of mathematics.

Both researchers' ideas provide the basis for recent important developments, such as the resolution by American mathematician Phil Isett of a 1949 fundamental conjecture of Norwegian physical chemist and theoretical physicist Lars Onsager in the theory of turbulent flows, and the unexpected discovery by mathematicians Tristan Buckmaster and Vlad Vicol that irregular solutions of the Navier-Stokes system are not uniquely determined by the equations.