

Franc Forstnerič: short biography (January 2020)

Franc Forstnerič was born on May 1, 1958 in Ljubljana, Slovenia. He graduated from the University of Ljubljana in 1980 and obtained Ph.D. degree in mathematics from the University of Washington in Seattle, USA in 1985. In 1985, Forstnerič became employed by the University of Ljubljana where he was assistant professor of mathematics (1986-89) and associate professor (1989-93). During 1991-1993 he was a visiting professor at the University of Wisconsin-Madison, USA. In 1993 he became a tenured associate professor and in 1994 a full professor of mathematics at University of Wisconsin-Madison. In 1994 he was also named (in absentia) full professor of mathematics at the University of Ljubljana where he is currently employed. He served two terms (2007-2009 and 2011-13) as the dean of Faculty of Mathematics and Physics, University of Ljubljana.

Forstnerič spent extended periods as a visiting researcher and guest lecturer at several universities and research institutes worldwide, including Université de Provence in Marseille (January-February 1986), Mittag-Leffler Institute in Stockholm (1987/88), Max-Planck Institute for Mathematics in Bonn (February-June 1990), University of Wisconsin in Madison (1988, 1991-93), Université de Lille (May-June 1994), Università Roma II – Tor Vergata (February-March 2007), Universitaet Bern (May-June 2007), Centre for Advanced Study (CAS) in Oslo (Fall 2016), and Stanford University (February 2019). In the last decade he has been making regular extended visits to University of Adelaide, Australia, and University of Granada, Spain.

Forstnerič was invited guest lecturer at over a hundred international conferences worldwide, and he participated on programming committees of numerous conferences. As a reviewer and expert panel member, he participated in the evaluation of scientific projects with the National Science Foundation (NSF, USA), the Swedish Science Foundation (NFR), the Royal Swedish Academy of Sciences, and the science agencies of Czech Republic, Italy, Montenegro, and Poland. During 2000-2005 he was the national coordinator of mathematics in Slovenia, and during 2000-2004 a member of the Prize Commission of Republic of Slovenia. In 2011 he was chairman of the board of natural sciences of the Slovenian Research Agency (ARRS).

Forstnerič gave a number of major contributions to complex analysis and geometry, and on several occasions he initiated new lines of investigation which were subsequently continued by others. In his first decade of research activity up to early 1990's, he studied holomorphic maps between domain, their boundary regularity and holomorphic extensions, localization of the Kobayashi metric, and applications of the classical Riemann-Hilbert boundary value problem to problems in holomorphic convexity and mapping theory. Among his best know results from this period were the construction of proper holomorphic embeddings of strongly pseudoconvex domains into balls, and the proof that any proper holomorphic map between balls, which is sufficiently regular at a boundary point, is a rational map. He also began the study of group invariant holomorphic maps of balls. These were among the starting points of systematic investigations of the existence, regularity, and classification of holomorphic maps between domains of different dimensions.

During 1990's when at the University of Wisconsin in Madison, Forstnerič developed major applications of the newly discovered method of treating automorphisms of

complex Euclidean spaces and some other complex manifolds by using flows of complete holomorphic vector fields; the so-called Andersén-Lempert theory. This led to numerous constructions by him and other researchers which answered some long standing open questions in complex analysis and geometry.

Later in the same decade, Forstnerič started investigating the Oka-Grauert principle whose modern extensions, initiated by Mikhail Gromov in 1989, were not well understood at the time. Following a decade of his intensive research of this subject, whose initial part was made jointly with Jasna Prezelj, and after having solved a problem posed by Gromov in 1989, Forstnerič introduced in the literature a new class of Oka manifolds (2009) and provided several characterizations of this class. He presented a comprehensive treatment of this subject in his monograph *Stein Manifolds and Holomorphic Mappings* published by Springer-Verlag in 2011 and 2017. Oka manifolds have since become a standard notion in complex analytic geometry, in a precise sense dual to Stein manifolds. This was acknowledged by the new class *32Q56 Oka principle and Oka Manifolds* in the MSC 2020 classification. Another seminal result from the same period is his construction of noncritical holomorphic functions on Stein manifolds and Stein spaces. This technique found diverse applications, in particular to exposing boundary points and the constructions of proper holomorphic embeddings to Stein manifolds with the density property.

Since 2012, Forstnerič has been collaborating with Antonio Alarcón and Francisco J. López from University of Granada on the theory of minimal surfaces in Euclidean spaces. Together, and occasionally with other collaborators (notably Barbara Drinovec Drnovšek and Finnur Lárusson) they made significant contributions to the approximation and homotopy theory for such surfaces. By introducing new complex analytic techniques, they also obtained a major breakthrough on the Calabi-Yau problem for minimal surfaces, showing in particular that every Riemann surface of finite genus and at most countably many boundary curves is the conformal structure of a bounded complete minimal surface with Jordan boundary in \mathbb{R}^3 . Their methods are applicable in several other geometries, including complex contact geometry.

Forstnerič has over 120 scientific publications including two books. A number of his papers appeared in journals such as *Annals of Math.*, *Acta Math.*, *Inventiones Math.*, *Duke Math. J.*, *Amer. J. Math.*, *J. Europ. Math. Soc.*, *J. Math Pures Appl.*, *Math. Ann.*, *Analysis & PDE*, *Geometry & Topology*, and others.

Forstnerič received several prizes and recognitions for his scientific work. During PhD studies at University of Washington in Seattle, he was a Fulbright Scholar and recipient of a Sloan Predoctoral Fellowship. In 1988 he received the Boris Kidrič prize for scientific achievements from Republic of Slovenia. During his tenure at University of Wisconsin in Madison he received the Vilas Associates Award. He was elected associate member of Slovenian Academy of Sciences and Arts in 1999 and became its full member in 2005. Since 2017 he is secretary of the division of mathematical, physical, chemical and technical sciences of Slovenian Academy of Sciences and Arts. In 2019 he received invitation as a plenary speaker at the 8th European Congress of Mathematics to be held in Slovenia in July 2020. In 2019 he received the Stefan Bergman Prize awarded by the American Mathematical Society.