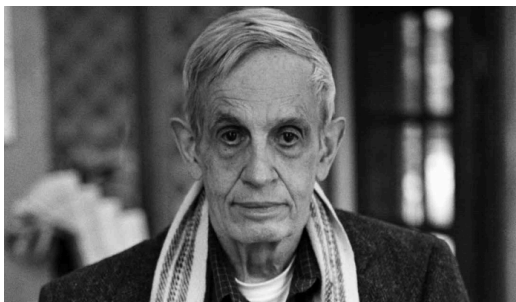# THE ABEL PRIZE

John F. Nash, Jr. and Louis Nirenberg receive the Abel Prize for 2015

*"for striking and seminal contributions to the theory
of nonlinear partial differential equations and
its applications to geometric analysis."*

John F. Nash, Jr. is one of a handful of mathematicians known outside academia, due to the 2001 film about him, *A Beautiful Mind*, loosely based on Sylvia Nasar's bestselling biography of the same name.

John Forbes Nash, Jr. was born in 1928 in Bluefield, West Virginia. He entered the Carnegie Institute of Technology (now Carnegie Mellon University) in Pittsburgh with a full scholarship, originally studying for a major in chemical engineering, before switching to chemistry and finally changing again to mathematics.

He obtained his Ph.D. at Princeton University. His thesis, *Non-Cooperative Games*, is one of the foundational texts of game theory. It introduced the concept of an equilibrium for non-cooperative games, the "Nash equilibrium", which has had a great impact in economics and the social sciences. His main contributions vary in many fields in mathematics; notably, we recall the Nash embedding Theorem, the Nash-Moser existence theorem, De Giorgi-Nash-Moser regularity results.

For his contributions he has won many awards, including the Prize in Economic Sciences in memory of Alfred Nobel.

Louis Nirenberg has had one of the longest, most feted and most sociable careers in mathematics. In more than half a century of research he has transformed the field of partial differential equations, while his generosity, gift for exposition and modest charm have made him an inspirational figure to his many collaborators, students and colleagues.

Louis Nirenberg was born in Hamilton, Canada, in 1925. He studied mathematics and physics at McGill University, Montreal and graduated in 1945.

He got his master in mathematics in 1947 at the New York University, and embarked on a Ph.D. under James J. Stoker, who suggested to him an open problem in geometry that had been stated by Hermann Weyl three decades previously. Nirenberg's subsequent work has been largely concerned with elliptic PDEs, and over the following decades he developed many important theorems about them.

Among his many contributions, we recall the Agmon-Douglis-Nirenberg theorem, the introduction and study of the John-Nirenberg space of functions, the Gidas-Ni-Nirenberg classification result and the Caffarelli-Kohn-Nirenberg regularity result on the Navier-Stokes equation.

Louis Nirenberg was awarded many prizes, among them the Chern Medal.

The **Abel Prize** *is an international prize presented annually by the King of Norway to one or more outstanding mathematicians. Named after Norwegian mathematician Niels Henrik Abel (1802–1829), the award was established in 2001 by the Government of Norway and complements the Holberg Prize in the humanities.*
The Abel Prize has often been described as the mathematician's "Nobel Prize" competing in that respect with the much older Fields Medal.