



THE ABEL PRIZE

The Norwegian Academy of Science and Letters has decided to award the Abel Prize for 2012 to

Endre Szemerédi

Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, Budapest,
and Department of Computer Science, Rutgers, The State University of New Jersey, USA

“for his fundamental contributions to discrete mathematics and theoretical computer science, and in recognition of the profound and lasting impact of these contributions on additive number theory and ergodic theory.”

Discrete mathematics is the study of structures such as graphs, sequences, permutations, and geometric configurations. The mathematics of such structures forms the foundation of theoretical computer science and information theory. Szemerédi was one of the first to realize the importance of theoretical computer science. He has also made deep, important, and influential contributions to many other branches of mathematics and has published over 200 scientific articles.

The President of the Norwegian Academy of Science and Letters, Nils Christian Stenseth, announced the winner of the 2012 Abel Prize at the Academy in Oslo today, 21 March. Endre Szemerédi will receive the Abel Prize from His Majesty King Harald at an award ceremony in Oslo on 22 May. The Abel Prize recognizes contributions of extraordinary depth and influence to the mathematical sciences and has been awarded annually since 2003. It carries a cash award of NOK 6,000,000 (close to EUR 800,000 or USD 1 million).

Endre Szemerédi is described as a mathematician with exceptional research power and his influence on today's mathematics is enormous. Yet as a mathematician, Szemerédi started out late. He attended medical school for a year, and worked in a factory before he switched over to mathematics. His extraordinary talent was discovered when he was a young student in Budapest by his mentor Paul

Erdős. Szemerédi lived up to his mentor's great expectations by proving several fundamental theorems of tremendous importance. Many of his results have generated research for the future and have laid the foundations for new directions in mathematics.

Many of his discoveries carry his name. One of the most important is Szemerédi's Theorem, which shows that in any set of integers with positive density, there are arbitrarily long arithmetic progressions. Szemerédi's proof was a masterpiece of combinatorial reasoning, and was immediately recognized to be of exceptional depth and importance. A key step in the proof, now known as the Szemerédi Regularity Lemma, is a structural classification of large graphs.

In 2010, on the occasion of Szemerédi's 70th birthday, the Alfréd Rényi Institute of Mathematics and the János Bolyai Mathematical Society organized a conference in Budapest to celebrate his achievements. In the book, *An Irregular Mind*, published prior to the conference, it is stated that "Szemerédi has an 'irregular mind'; his brain is wired differently than for most mathematicians. Many of us admire his unique way of thinking, his extraordinary vision."

The Abel Committee notes, "Szemerédi's approach to mathematics exemplifies the strong Hungarian problem-solving tradition. The theoretical impact of his work has been a game-changer."

Awards and honours: Endre Szemerédi has received many awards and honours for his contributions to mathematics and computer science. In 2008 he was awarded the Leroy P. Steele Prize for Seminal Contribution to Research by the American Mathematical Society. The same year Endre Szemerédi received the Rolf Schock Prize in Mathematics from the Royal Swedish Academy of Sciences.

Endre Szemerédi is a member of the Hungarian Academy of Sciences and of the US National Academy of Sciences.

The Abel Prize: The prize is awarded by the Norwegian Academy of Science and Letters. The choice of the Abel Laureate is based on the recommendation of the Abel Committee, which consists of five internationally recognized mathematicians. The Abel Prize was awarded for the first time in 2003. The Abel Prize and associated events are funded by the Norwegian Government.



For more information about the laureate, his achievements and the Abel Prize, visit the Abel Prize website www.abelprisen.no/en/

Endre Szemerédi