



For immediate release
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2024 Euler Medal be awarded to **Gyula O. H. Katona**

Euler Medals recognize **distinguished lifetime career contributions to combinatorial research**.

In the combinatorics community, **Gyula O.H. Katona** is one of the best known experts in extremal set theory, known for fundamental theorems, elegant proofs and inspiring conjectures. Professor Gyula Katona's research interests lie mostly in combinatorics (with applications to probability and information theory), database theory, and combinatorial search theory.

His most renowned result is the so-called *shadow theorem* that determines the minimum number of k -subsets of a family $\mathcal{F}$ of I -sets over all I -uniform families of given size. This is one of the first isoperimetric results in discrete mathematics, and is widely applied in all areas of combinatorics and beyond.

He was among the pioneers of intersection theory of finite sets. He proved the non-uniform t -intersection theorem, and gave the "book proof" of the celebrated Erdős-Ko-Rado theorem on k -uniform intersecting families. This proof of his introduced the *Katona cycle method* (or more generally the *Katona permutation method*), a very powerful tool that has been often used to achieve results on set systems ever since.

Apart from intersection theorems, Professor Katona's research in extremal finite set theory focused on Sperner-type problems, that is, on set systems that satisfy properties described by certain inclusion patterns. In the early 80s, with Tamás Tarján, at that time a student of his, he introduced the area of forbidden subposet problems that gives a very general framework to the field of set inclusion problems.

His contributions to the area include the first specific results and methods, and maybe even more importantly, by collaborating and giving lectures on the topic, he introduced many

researchers to the field that has become very popular in extremal set theory, Professor Katona has supervised and co-supervised more than twenty graduate students the most notable of whom are Péter Frankl and Zoltán Füredi.

The Institute of Combinatorics and its Applications is an international scholarly society that was founded in 1990 by Ralph Stanton; the ICA was established for the purpose of promoting the development of combinatorics and of encouraging publications and conferences in combinatorics and its applications.