

The Erdos Prize in Mathematics for the year 2014 is awarded to Dr. Eran Nevo from Ben-Gurion University. The prize committee citation follows.

Committee rationale: Eran Nevo is a leading expert in the areas of topological and geometric combinatorics. More specifically, his main contributions are to the theory of face numbers of simplicial complexes. Much of Eran's research is focused on various aspects of the 35 years old g -conjecture of McMullen. This concerns a conjectured characterization of the face number of triangulated spheres. The polytopal case of the g -conjecture has been settled in 1980 by Stanley (necessity) and by Billera and Lee (sufficiency), but the general case remains open to this date.

One highlight of Eran's work is his 2013 Acta Mathematica paper with Satoshi Murai where they establish the second part of the Generalized Lower Bound Conjecture (GLBC) of McMullen and Walkup. The first part of the GLBC concerns the unimodality of the h -vector of a polytope and is a consequence of Stanley's g -theorem. The second part of the GLBC

deals with structural properties of polytopes with two equal consecutive h -numbers and has been considered a major unsolved problem in polytope theory for over 40 years.

Nevo and Murai's work is a tour de force that uses the Lefschetz property of face rings of polytopes together with an ingenious combination of arguments from algebraic topology, commutative algebra and convex geometry. This is a major achievement that will have a lasting impact on the area.

Another remarkable result of Eran (together with Stedman Wilson) concerns the well known problem of estimating the number of triangulated 3-spheres with n vertices.

Using a brilliant new construction, Nevo and Wilson show that the classical upper bound on the number of such spheres due to McMullen, is nearly sharp.

This major breakthrough has already been extended to all odd spheres in joint work of the authors together with Francisco Santos.

Eran has much more work to his credit, including some of the best existing results on the g -conjecture for non-polytopal spheres, as well as an emerging theory of high dimensional minors of general simplicial complexes with substantial applications to embedding problems.

These accomplishments have firmly placed Eran Nevo in the forefront of researchers in the competitive area of topological combinatorics.

The committee therefore decides to award the 2014 Erdos prize to Eran Nevo.