The Committee has decided to award the 2021 Erdos prize to Avraham (Rami) Aizenbud for his fundamental, original and transformative work in relative representation theory - the study of the branching phenomenon for the restriction of a representation to a subgroup. In his early work from the PhD, Aizenbud and collaborators coalesced an assortment of methods employed by Gelfand, Kazhdan, Bernstein and others in the 80's, and drastically improved them to resolve a conjecture of Rallis and Schiffmann regarding multiplicity one decomposition of a restriction, thus establishing the strong Gelfand property. This breakthrough had a dramatic impact on the study of periods of automorphic forms. Since then, Aizenbud has been consistently producing high quality results, establishing himself as a world leader in several core directions of representation theory and related algebraic geometry.

A central theme in Aizenbud's work is the study of distributions on various algebro-geometric objects invoking methods of algebraic analysis, which allows to relate between representation theory and algebraic geometry. This is particularly challenging in the non-Archimedean setting, where the theory of D-modules cannot be used to define the holonomicity of a distribution. Aizenbud and his collaborators defined and studied the concept of wave-front holonomicity of a distribution on a p-adic manifold, and provided many examples. Recently, using tools from model theory, they established this holonomicity for a wide class of distributions which is stable under Fourier transform.

As part of their comprehensive treatment of relative representation theory, Aizenbud and collaborators have obtained uniform bounds on the representation growth of p-adic and arithmetic groups conjectured by Larsen and Lubotzky, yielding important information on the convergence of the corresponding representation zeta-function. Their proof is based on relating the original algebraic problem to an analytic question regarding singularities of measures on Euclidean spaces and related PDE, and ingeniously brings together techniques and ideas from remote fields, such as number theory, algebraic geometry, PDE and logic - an exemplary instance of the unity of mathematics.

To summarize, Rami Aizenbud is an accomplished and creative problem solver as well as a theory builder, and deserves the recognition of the IMU for his achievements.