

Hang Lung Mathematics Awards

Hang Lung Mathematics Awards is a highly regarded biennial mathematics research competition for secondary school students in Hong Kong. Founded in 2004 by Hang Lung Properties and The Chinese University of Hong Kong, Hang Lung Mathematics Awards has blazed a trail in secondary school mathematics education, encouraging students to realize their creative potential in mathematics and sciences, and stimulating their passion for intellectual discovery.

Since its inauguration in 2004, the Awards has attracted 2,600 students from over 200 secondary schools, producing over 460 research papers, many attaining undergraduate level academic proficiency. Many of our earlier winners have completed their studies from top universities in Hong Kong and around the world, and are now making meaningful contributions to society in various sectors, including academia and other professions.

In 2021, Hang Lung Properties teamed up with one of the world's top young universities, The Hong Kong University of Science and Technology, as our partner in the next stage of Hang Lung Mathematics Awards development. Under this partnership, Hang Lung Properties donates HK\$2.5 million to each competition, of which HK\$1 million is set aside as monetary prizes, and the remainder goes towards academic consultancy, assessment process, and administration of the competition, as well as education promotion activities. In addition, The Hong Kong University of Science and Technology offers tuition scholarships for teachers nominated by the winning schools to enroll in the Master of Science Program in Mathematics for Educators.

Hang Lung Mathematics Awards has two principal committees, the Scientific Committee, the academic and adjudicating body of the competition, and the Steering Committee, the advisory body that provides support, guidance, and oversight of the Awards. Professor Richard Schoen, 2017 Wolf Prize Laureate in Mathematics, is the Chair of the 2023 Hang Lung Mathematics Awards Scientific Committee, which boasts 12 renowned scholars from eminent universities around the globe. Professor George F. Smoot, 2006 Nobel Laureate in Physics, chairs the 2023 Hang Lung Mathematics Awards Steering Committee, which comprises mathematicians, scientists, and leaders from different sectors of society.

Schools are invited to form teams of up to five students. Under the supervision of a teacher, each team decides on a mathematics topic, designs and carries out a mathematics research project, then submits a research report that summarizes the methodology, research, and results. The Scientific Committee will evaluate the research reports in a rigorous, multi-step review process that is comparable to publishing an article in a scientific journal and determine the teams that will be invited to participate in an oral defense. The oral defense is modeled after the doctoral dissertation defense, and comprises a brief public presentation of the research project, followed by a closed-door inquiry by the Scientific Committee. At the conclusion of the oral defense, the Scientific Committee will decide the

winners of the Hang Lung Mathematics Awards, and the results are announced at the awards presentation ceremony.

At each Hang Lung Mathematics Awards, up to eight awards will be presented to recognize those mathematics research projects that meet the highest academic standards in terms of methodology, research, and scholarship. The eight awards are: a Gold Award of HK\$400,000, a Silver Award of HK\$200,000, a Bronze Award of HK\$100,000, and up to five Honorable Mentions, each worth HK\$60,000.

Each award has four components: a Student Education Award, to be shared equally among team members and applied towards their university studies; a Teacher Leadership Award, for the supervising teacher; a School Development Award, for the winning school to promote mathematics education, and an Educator Scholarship, for a teacher nominated by the winning school. Besides monetary prizes, each winning student and teacher will receive a crystal trophy and a certificate, and their winning school will receive a crystal trophy.

Etched inside the crystal trophy is a visualized representation of an Einstein-Rosen bridge. An Einstein-Rosen bridge, sometimes called a “wormhole”, is a transcendental bijection of the spacetime continuum, an asymptotic projection of the Calabi-Yau manifold manifesting itself in Anti-de Sitter space, first described by Ludwig Flamm in 1916 and rediscovered by Albert Einstein and Nathan Rosen in 1935. It represents the geometry of a “throat” that joins disparate regions of spacetime, but it is non-traversable, i.e., no physical timelike trajectory crosses the bridge. It plays a prominent role in mathematics and physics, where it has implications for geometry, gravity, information, and quantum physics.

To learn more about Hang Lung Mathematics Awards, please visit:

