24th Annual BAMO Awards

Santa Clara University
March 19, 2023

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MATHEMATICAL
SCIENCES INSTITUTE

BAMO
Bay Area Mathematical Olympiad

- 2:30   Introduction
- 2:45   Solving polynomials with origami (or: things you can do when you lose your compass).

  Inna Zakharevich, Cornell University

  Sometimes we just want to solve problems by folding paper. Sometimes these problems are "I would like to do some origami," for which sitting down and folding some paper is a perfect solution. Other times, these problems are "I am at a math competition and I forgot my compass," in which case it might be useful to know that it is possible to make any construction using a compass and straightedge just by folding a piece of paper. And in even stranger times one may want to do impossible things, and folding paper is just the tool for the job, at least if trisecting an angle or doubling a cube is your game. In this talk we will discuss some of the mathematics underlying origami, solve some polynomials, and explain why origami is more powerful than other traditional approaches.

- 3:45   Presentation of awards

About BAMO

- **The Bay Area Mathematical Olympiad** (BAMO) is an annual contest for middle and high school students. The first high school contest was held on February 23, 1999. The 24th annual BAMO took place on March 1, 2023. The BAMO competition tests students' problem-solving skill, stamina, and creativity.

- **BAMO is made possible** by generous gifts from Tom Davis and Ellyn Bush, Peggy and Tom Rike, the support of the Simons Laufer Mathematical Sciences Institute, and numerous donations from private individuals.

- **BAMO Organizing Committee**: Zvezdelina Stankova, UC Berkeley; Paul Zeitz, University of San Francisco; Austin Shapiro, Proof School.

- **BAMO Problems Committee**: Austin Shapiro, Tom Davis, Daniel Rostamloo, Zvezdelina Stankova, Tom Rike, Paul Zeitz.

About BAMO

- **BAMO Grading Team**: Aaron Agulnick, Aaron Zaks, Arun Sharma, Ashmita Reddy, Atticus Cull, Boris Mladenov, Cody Strouse, Colby Brown, Daniel Rostamloo, Elysée Wilson-Egolf, Ellen Kulinsky, Erik Herrera, Felicia Lim, Helen Zhang, Ian Sullivan, Liliana Mironova, Margaret Braun, Mátyás Sustik, Orlando Munoz, Paul Zeitz, Peter Koroteev, Saud Molaib, Ted Alper, Trevor Oliveira-Smith Vera Serganova, Zili Wang, Zvezdelina Stankova.

- We thank:
  - Alon Amit, Mira Bernstein, Austin Shapiro, Zvezdelina Stankova, and the Gillis Mathematical Olympiad for problem contributions;
  - The UC Berkeley mathematics department for providing meeting space for the grading of BAMO;
  - Professors Frank Farris and Shamil Asgarli of the Santa Clara University mathematics department for generously hosting both a satellite site for the BAMO exam and especially, this awards ceremony;
  - Tom Davis, as always, for the T-shirt design!

BAMO
Bay Area Mathematical Olympiad

Inna Zakharevich moved to the Bay Area when she was 6, and attended middle and high school in Palo Alto. BAMO was the first competition that she enjoyed, and she looked forward to it every year (and did the problems for several years after graduating, as well). She got a bachelor's in Harvard, a CASM at the University of Cambridge, and a Ph.D. at MIT. She is currently a professor in the math department of Cornell University, where she has filled her office with random origami and interesting 3D-printed objects. Inna's research is on the intersection of scissors congruence and K-theory, which she thinks is the perfect combination of little pictures she can draw and ridiculously complicated category theory. She enjoys reading, knitting, origami, video games, and telling people cool things about math (and using far too many parentheses).

Inna joins a very distinguished list of speakers, which includes Arthur Benjamin, Melanie Wood, and the late John Conway and Ronald Graham. See `https://www.bamo.org/archives/speakers/` for more information.