BAMA

School Year 2016—2017

Join us for a free talk...

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John M. Sullivan

Soap Bubbles and Polyhedra

Santa Clara University, Daly Science 207

Friday, February 3, 2017, 7:30 pm

In the 1870s, Plateau observed the geometric structure of soap froths: at any corner where bubbles meet, there are exactly four bubbles in a tetrahedral pattern. Plateau's rules are key for understanding the physic of foams, but were not given a mathematical proof until the 1970s. This proof relies on ruling out seven other possibilities. For instance, when we dip a wire frame cube into soapy water, the resulting soap film has four Plateau corners instead of one of a new type. We will show how these eight candidates arise from the eight possible polyhedra whose faces are equilateral triangles (including Platonic solids as well as less familiar ones). Similar ideas can also be extended to higher dimensions, where there would be more possibilities for singularities in soap films.

John M. Sullivan is Professor of Mathematics at the Technische Universitaet Berlin. He got his PhD from Princeton in 1990, after earlier degrees from Harvard and Cambridge. Sullivan's research in geometry deals with finding optimal shapes for curves and surfaces in space. Examples include clusters of soap bubbles minimizing their surface area, or knots tied tight in rope, minimizing their length. Sullivan has made extensive use of computer graphics to illustrate this work as mathematical art.

*** See back for map and directions.**

Visit the Bay Area Mathematical Adventures (BAMA) at http://mathematicaladventures.org

To receive email notifications about BAMA talks, please contact Frank Farris at ffarris@scu.edu .

BAMA

Bay Area Mathematical Adventures

A series of presentations on diverse topics by remarkable mathematicians. All talks are free and open to the public.

WHY?

BAMA aims to challenge and motivate students to think mathematically. Speakers will present real mathematics, and will share with the audience modern views of mathematics. Some talks will provide students with related problems, or will enable teachers to expand later on the topics with their students.

WHO?

BAMA is aimed at bright high-school age students. However, all are welcome: younger or older students, teachers, parents, and the general public.

WHEN?

Evening talks will be given approximately once a month between September and April. Each talk will be self-contained (speakers will not assume their audiences have attended previous talks).

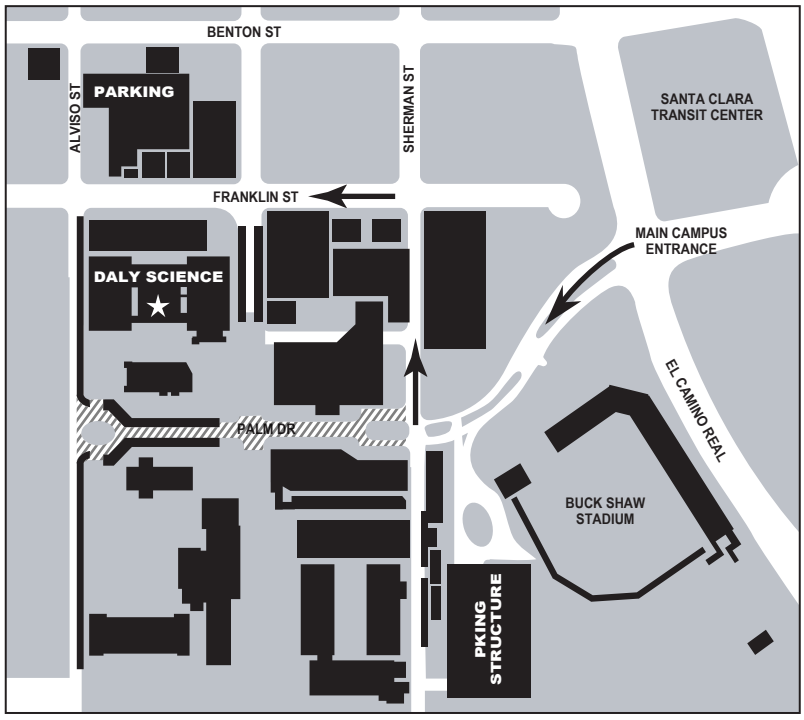
WHERE?

Santa Clara University
Daly Science, rm. 207

- From US Highway 101, take the De La Cruz Blvd/Santa Clara exit and follow the signs to El Camino real and main campus entrance.
- From I-280, take I-880 north toward Oakland to The Alameda exit. Turn left onto The Alameda (which becomes El Camino Real) to main campus entrance.
- From I-880, take The Alameda exit, travel north (The Alameda becomes El Camino Real) to main campus entrance.

Note: If you arrive by car, you can go directly to the parking garage at Franklin and Alviso and purchase a permit at a self-serve kiosk. Alternatively, it is usually possible to find free street parking within a couple of blocks.
The parking garage is free after 7 pm on Fridays.

- If you have a disability and require reasonable accommodation, please call anyone on the steering committee, or 1-800-735-2929 (TTY—California Relay) 24 hours in advance.



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