

Levi L. Conant

LECTURE SERIES

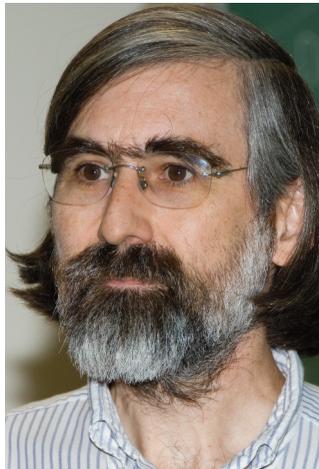
David Vogan

Professor of Mathematics
Massachusetts Institute of Technology

The Character Table of $E_8(\mathbb{R})$

Thursday, 4:00 p.m.
September 15, 2011

Fuller Labs, Lower Perreault Hall

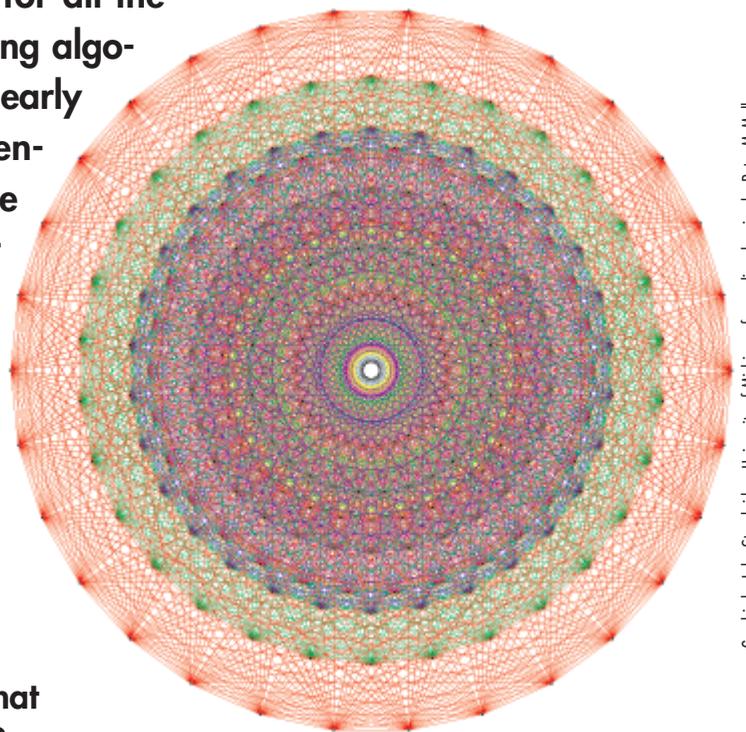


David Vogan has been a member of the MIT faculty since 1979. He received his PhD from MIT in 1976, under the direction of Bertram Kostant. Most of his work concerns representation theory of Lie groups. He has written papers and books with 13 separate co-authors (an approach he recommends for its effect on Erdős number, for relief of writer's cramp, for looking smarter, and for enjoying mathematics). He is a member of the American Academy of Arts and Sciences.

In 2007, a group of about 20 mathematicians completed the computation of character tables for all the real forms of the exceptional Lie groups, using algorithms introduced by Kazhdan and Lusztig nearly 30 years ago. In the case of the 248-dimensional group called $E_8(\mathbb{R})$, the character table (in a very compressed form) occupies about 50 gigabytes of disk space. I'll talk about several (closely related) questions:

- Since these groups have infinitely many conjugacy classes and infinitely many representations, how can one write a character table in finite terms?
- What assurance is there that these enormous tables are correct?
- How can one extract from them information that a human can understand and find interesting?

As a corollary of these investigations, I will also try to shed some light on the question of whether computers are animated by a demonic malevolence toward humanity.



Graphic by John Stembridge, University of Michigan, from a line drawing by Peter McMullen

Levi Leonard Conant, 1857–1916

Levi Conant was a mathematician and educator who spent most of his career as a faculty member at Worcester Polytechnic Institute; he served as head of the Mathematics Department and as acting president from 1911 to 1913. Conant was noted as an outstanding teacher, and an active scholar. He published a number of articles in scientific journals and wrote four textbooks: *The Number Concept: Its Origins and Development* (1896), *Original Exercises in Plane and Solid Geometry* (1905), *Five-Place Logarithmic and Trigonometric Tables* (1909), and *Plane and Spherical Trigonometry* (1909). Upon his premature death in 1916 he made a large bequest to The American Mathematical Society, which established the Levi L. Conant Prize, awarded annually to recognize the best expository paper published in either *Notices of the AMS* or *Bulletin of the AMS* in the previous five years.

Sponsored by WPI and hosted by the Department of Mathematical Sciences

Students and faculty are invited to meet the speaker
at a reception following the lecture

wpi.edu/+Math/News/conant.html

