

Levi L. Conant

LECTURE SERIES

Avi Wigderson

Herbert H. Maass Professor,
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Expander graphs:

—a playground for algebra,
geometry, combinatorics, and
computer science



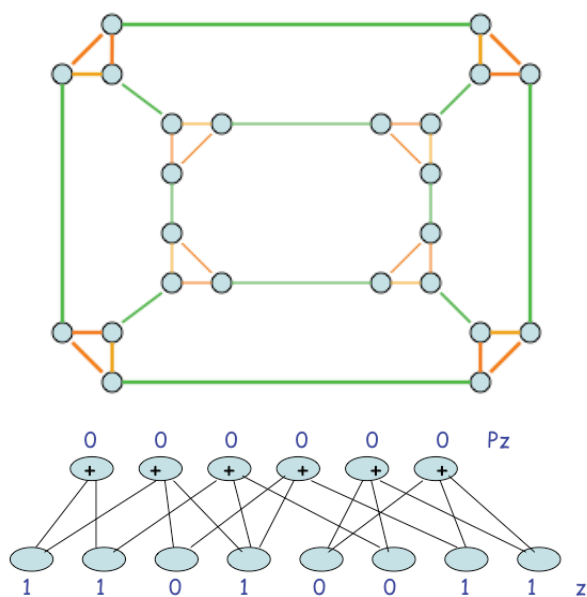
Thursday, 4:00 p.m.
September 24, 2009
Fuller Labs, Perreault Hall/upper

Expander graphs are extremely useful objects. In computer science, their applications range from network design, computational, derandomization, error correction, data organization, and more.

In mathematics they are used in topology, group theory, game theory, information theory, and, naturally, graph theory. I plan to explain what expanders and their basic properties are, and survey the quest to explicitly construct them. I'll focus on the recent combinatorial constructions, via the "zig-zag" product, and how these can go beyond the bounds achieved by algebraic methods. I'll also demonstrate some of the applications.

This talk is accessible to graduate students with no special background in Math and Computer Science.

Avi Wigderson received his BSc in computer science from Technion in 1980, and his PhD from Princeton in 1983. He served on the faculty at the Hebrew University in Jerusalem from 1986 to 2003, and is currently a member of the mathematics faculty at the Institute for Advanced Study at Princeton. His research interests lie principally in complexity theory, algorithms, randomness, and cryptography. His honors include the Nevanlinna Prize for outstanding contributions in mathematical aspects of information sciences (1994), the ICM Plenary Lecture in Madrid, Spain (2006), the AMS Conant Prize in 2008, and the Gödel Prize in 2009.



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

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