

# THE INAUGURAL MICHAEL MOODY LECTURE



## The Linear Algebra of Internet Search Algorithms

**LESLEY WARD**

UNIVERSITY OF SOUTH AUSTRALIA

4:30 - 5:30 p.m. | Sunday, May 2, 2010 | Galileo McAlister Hall

Refreshments at 4:15 p.m.

Hosted by the Harvey Mudd College Department of Mathematics

**H**ow do Web-search algorithms work? Early algorithms just counted the number of times a query word appeared in a given Web page. More recent algorithms rely on “link analysis,” which aims to mine the collective wisdom encoded in the network of links: people make judgements about how useful a given page is for a given topic, and they express these judgments through the

hyperlinks they choose to put on their own pages. I will show how linear algebra forms the common underpinning of three link-analysis algorithms for web search: PageRank, HITS and SALSA. I will also discuss a modification of HITS that originated from a Mathematics Clinic at Harvey Mudd College and is joint work with several people, including Harvey Mudd College undergraduates.



Lesley Ward is a recipient of the Alder Award for Distinguished Teaching from the Mathematical Association of America and has held a Prize Teaching Fellowship at Yale, a Postdoctoral Fellowship at the Mathematical Sciences Research Institute (MSRI), and an Evans Instructorship at Rice. Her research is in complex analysis, harmonic analysis and industrial applications of mathematics. She is proud to have been a member of the HMC Mathematics Department for nine years, before moving to the University of South Australia in 2006.

The lecture is free and open to the public. For more information, contact Francis Su, [su@math.hmc.edu](mailto:su@math.hmc.edu).

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