

## ABOUT THE LECTURE

### Patterns & Disorder:

*How Random  
can Random Be?*

A tiled floor usually has regular, ordered patterns in it, even if the tiling may be very complicated. We will explore what it means for a mathematical object to be ordered or disordered. For example, do all geometric configurations have to contain patterns? Do large sets of numbers have to contain any patterns? We explore different notions of patterned and random sets, starting with simple, well-known patterns and ending with problems that mathematicians still don't know how to solve.



THE UNIVERSITY OF ARIZONA  
COLLEGE OF SCIENCE

Mathematics

Members of the department create, communicate, and apply mathematics of the highest caliber through activities such as internationally recognized research and graduate education, award winning undergraduate programs, and extensive outreach to local schools.

The department's faculty includes two Regents' Professors, three University Distinguished Professors, and numerous recipients of national and international awards. Over the last five years, a large percentage of the faculty has been awarded grants and contracts from external funding agencies, with total awards averaging about \$5 million per year.

The department offers PhD, MS, and MA programs in Mathematics and Mathematics Education, and it provides major contributions to the Graduate Interdisciplinary Degree Programs in Applied Mathematics and Statistics. It also offers several unique post-doctoral opportunities for recent PhDs planning careers in research and education.

At the undergraduate level, the department provides more than 70,000 credit hours of instruction per year and offers its more than 600 majors unparalleled opportunities for research, tutoring experiences, and internships. The undergraduate, graduate, and GIDP programs have recently been recognized with two 5-year, \$3.5 million VIGRE training grants from the National Science Foundation, a distinction very few programs in the country can match.

The department has a long and excellent tradition of outreach to schools in Tucson, ranging from programs supporting high school teachers to a research center focusing on improving the mathematics education of low-income Latino students.

Through the breadth and quality of its programs, the Department of Mathematics makes major contributions to the mission of the University of Arizona and to the quality of life in Tucson and beyond.

Ken McLaughlin, Professor and Head  
The University of Arizona Department of Mathematics

DATE CHANGE AND NEW LOCATION!

# MATHEMATICS Patterns & Disorder:

*How Random can Random Be?*

**Bryna Kra**

2015  
**DANIEL BARTLETT  
MEMORIAL LECTURE**

Monday, March 30, 2015  
6:30pm – Room 150  
Harvill Building  
1103 East 2nd Street  
UA Campus



THE UNIVERSITY  
OF ARIZONA

## ABOUT BRYNA KRA



Bryna Kra is the Sarah Rebecca Roland Professor of Mathematics at Northwestern University. She has won the American Mathematical Society Conant Prize and Centennial Fellowship, and is a fellow of the American Mathematical Society.

She grew up in the United States and has lived in France and Israel, and has lectured around the world, in Asia, Europe and South America. When not thinking about math and staring at a blank notepad, she enjoys playing the piano and cooking elaborate meals.

## ABOUT DANIEL BARTLETT



Daniel Wezelman Bartlett was born November 8, 1980. He died of sudden cardiac arrest on August 8, 2006, just before commencing his fourth year of graduate school in mathematics at the University of Arizona. He was a wonderful and loving son to his parents, a close companion to his younger sister, and fierce friend for many.

Daniel was born with physical impairments, but that didn't stop him from enjoying life. He played piano, trumpet, and shofar; he was a chess player; and he was an academic athlete, winning scholarships and contests for Academic Decathlon, economics, and the annual Shakespeare monologue competition (he loved portraying Iago). He was a proud leader in his B'rith Youth Organization.

Daniel's academic interests were not restricted to mathematics. As a junior in high school he was selected for the Telluride Association Summer Program at Cornell, an intense program in the humanities.

He graduated from University High School in Tucson both as a Presidential Scholar and a National Merit Scholarship winner.

Daniel loved mathematics and excelled at it all his life. He went to Harvard for his undergraduate work, concentration in mathematics, where his undergraduate advisor was Barry Mazur. While an undergraduate, he worked one summer at the University of Arizona Astronomy Department and another summer at the National Security Administration, where he co-authored a classified paper. He received his BA degree in 2003.

While studying for his PhD at the University of Arizona, Daniel had narrowed his research interest to the field of algebraic geometry, and at the time of his death he was beginning the work he hoped to use for his doctoral dissertation.

## DANIEL BARTLETT MEMORIAL FUND

Generous contributions by Daniel's family and friends have made it possible to establish this fund, whose purposes are to memorialize Daniel Bartlett, to foster awareness and appreciation of mathematics of the highest level in the Tucson community, and to support graduate education in Mathematics at the University of Arizona. The inaugural Daniel Bartlett Memorial Lecture was given in 2008 by Barry Mazur, Gerhard Gade University Professor, Harvard University.