

2017

MOVES

MATHEMATICS OF VARIOUS  
ENTERTAINING SUBJECTS



# MOVES Conference Schedule of Programs and Activities

Welcome researchers, educators, and families to the 2017 MOVES Conference, hosted by the National Museum of Mathematics! MoMath is pleased to acknowledge MOVES sponsor:

 TWO SIGMA

## Sunday Afternoon

### Math Walk in the Park

Meet in *Additions*, the shop at MoMath  
2:00-3:00 OR 4:00-5:00

*A Mathematical Walk in Madison Square Park* (All ages)  
Ron Lancaster, University of Toronto

## Sunday Evening

### Open House and Dessert Reception at MoMath

- 6:30** Museum open for conference attendees only; early registration begins.
- Enjoy more than three dozen unique, hands-on MoMath exhibits without the crowds!
- Plus: Karl Schaffer will lead attendees in hands-on string demonstrations to show surprising mathematical connections.
- Plus: Bob Bosch will share the beauty of the magic-numbered icosahedral dice that will be found in the conference bags of all full registrants.
- Plus: Enjoy the mathematical magic of Colm Mulcahy!
- 7:45** Dessert reception, Wafels & Dinges.
- 9:00** Reception ends.

### Research Talks

MoMath is pleased to host 32 research talks over the course of the conference.

*For the research track, follow the blue listings in the program.*

### Mathematical Activities

MoMath is happy to provide a change of pace with 22 guided mathematical activities.

*For the activity track, follow the yellow listings in the program.*

## MOVES 2017 Conference Locations



**MOVES Conference events will be held  
August 6 - 8, 2017 at the following locations:**

The National Museum of Mathematics, 11 East 26th Street

The Graduate Center, CUNY  
5th Avenue between 34th and 35th Streets

## Monday Morning

### Conference Kick-Off

Proshansky Auditorium, The Graduate Center, CUNY

- 8:30-9:15** Registration
- 9:15-9:25** Welcome  
Cindy Lawrence, Executive Director and CEO,  
National Museum of Mathematics
- 9:25-9:35** Opening remarks  
John Overdeck, Co-Chairman, Two Sigma Investments
- 9:35-10:35** Opening keynote  
Persi Diaconis, Mary V. Sunseri Professor of Statistics  
and Mathematics, Stanford University

Proshansky Auditorium,  
The Graduate Center, CUNY

- 10:45-** *The Saga of the Hardest*  
**11:10** *Logic Puzzle Ever*  
Jason Rosenhouse  
James Madison University

- 11:20-** *Coins and Logic*  
**11:45** Tanya Khovanova  
MIT

The Graduate Center, CUNY, C201/202

- 10:45-** *Bugs, Braids, and Batching*  
**11:10** Michael Allocca  
Muhlenberg College

- 11:20-** *Entropy of Non-rectangular*  
**11:45** *LEGO Bricks*  
Jonathon Wilson  
Ferris State University

The Graduate Center, CUNY, C203/204

- 10:45-** *On Partitions into Squares of*  
**11:10** *Distinct Integers Whose*  
*Reciprocals Sum to 1*  
Max Alekseyev  
George Washington University

- 11:20-** *Counting Necklaces by*  
**11:45** *Gilbreath Shuffling*  
Luis Lafuente  
University of Cádiz

**All MOVES attendees are welcome to enjoy FREE admission to MoMath throughout the conference; please just show your badge in the retail shop *Additions* when you arrive.**

The Graduate Center, CUNY, C198

- 10:45-** *Recreational Mathematics*  
**11:15** *(Really!)*  
Nancy Blachman  
Julia Robinson  
Mathematics Festival

- 11:25-** *Not Just a Knot*  
**12:10** (Middle school and up)  
Jennifer Austin  
The University of Texas  
at Austin

The Graduate Center, CUNY, C205

- 10:45-** *Functions Come to Life in*  
**11:15** *Funville Adventures*  
(Elementary school)  
Sasha Fradkin  
and Allison Bishop  
Main Line Classical Academy

- 11:25-** *Geometries in Motion!*  
**12:10** (All ages)  
Silvia Benvenuti  
University of Camerino

**12:10- 1:25** Lunch, pre-ordered to eat with others onsite at CUNY or on your own.

## Monday Afternoon

Proshansky Auditorium,  
The Graduate Center, CUNY

- 1:30-** *SET and Simulation:*  
**1:55** *All Sets are the Same,*  
*but Not Really*  
Liz McMahon  
Lafayette College
- 2:05-** *Bridge Deals*  
**2:30** *and Magic Squares*  
Simon Norton  
Cambridge University
- 2:30-** *Coffee Break/*  
**3:15** *Problem Sharing*
- 3:25-** *Wiggly Games and*  
**3:50** *Burnside's Lemma*  
David Molnar  
Rutgers University
- 4:00-** *Losing at Checkers is Hard*  
**4:25** Spencer Congero  
University of California,  
San Diego

The Graduate Center, CUNY, C203/204

- 1:30-** *Platonic Solids*  
**1:55** *of Trivial Symmetry*  
Henry Guss  
Amazon
- 2:05-** *Numerically Balanced Dice*  
**2:30** Robert Bosch  
Oberlin College
- 2:30-** *Coffee Break/*  
**3:15** *Problem Sharing*
- 3:25-** *Should We Call Them*  
**3:50** *Flexa-bands?*  
Yossi Elran  
Davidson Institute of  
Science Education,  
Weizmann Institute of Science
- 4:00-** *Flexagon Discoveries:*  
**4:25** *Going Beyond the Tetra-*  
*and Hexaflexagon*  
Ann Schwartz

The Graduate Center, CUNY, C201/202

- 1:30-** *Magic Configurations*  
**1:55** Brian Hopkins  
Saint Peter's University
- 2:05-** *Sum Effect with*  
**2:30** *Free Selection of*  
*Any Number of Cards*  
Colm Mulcahy  
Spelman College
- 2:30-** *Coffee Break/*  
**3:15** *Problem Sharing*
- 3:25-** *Data Transmission*  
**3:50** *Algorithms Applied*  
*to Magic Tricks*  
*and Magic Squares*  
Ricardo Teixeira  
University of Houston - Victoria
- 4:00-** *A Magic Trick Based on a*  
**4:25** *Double Error Correcting Code*  
Ricardo Teixeira  
University of Houston - Victoria

The Graduate Center, CUNY, C198

- 1:30-** *Additional Certainties*  
**2:00** Colm Mulcahy  
Spelman College
- 2:10-** *Playing with Half a Deck...*  
**2:55** *Plus One!*  
(Middle school and up)  
Ed Lamagna  
University of Rhode Island
- 3:05-** *The Most MatheMagical*  
**3:50** *Number*  
(Elementary school and up)  
Skona Brittain  
SB Family School
- 4:00-** *A Practical Workshop*  
**4:30** *on Magic Squares*  
Hossein Behforooz  
Utica College

The Graduate Center, CUNY, C205

- 1:30-** *Fire When Ready*  
**2:00** (Elementary school and up)  
James Propp  
Mathematical Enchantments
- 2:10-** *Two Family Oriented Color*  
**2:55** *Addition Games*  
Ron Taylor  
Berry College

**MORE Monday Afternoon activities on next page.**

## Monday Afternoon (continued)

The Graduate Center, CUNY, C205

**3:05-** *Introduction to the  
Game of SET*  
Ken Collins  
Charlotte Latin School

The Graduate Center, CUNY, C205

**4:00-** *Rolling Cube Puzzles*  
**4:30** (Elementary and middle school)  
Kira Zelbo  
Brearley School

## Monday Evening

**5:15** Conference Dinner - The Graduate Center, CUNY - *Pre-registration required*

Proshansky Auditorium, The Graduate Center, CUNY

### Monday Night MOVES

**7:00 PM**

#### Math in Unexpected Places

Colin Wright returns to delight us with a brief demonstration of how math emerges unexpectedly from the ancient art of juggling

#### "Love Varies by Degrees"

A musical skit performed by Joe Agueci, Marilyn McGrover, and Paul Padua

#### Mathemagic

Math and magic with Art Benjamin

## Tuesday Morning

Proshansky Auditorium, The Graduate Center, CUNY

**9:15-10:15** **Keynote speaker**  
Manjul Bhargava  
R. Brandon Fradd Professor of Mathematics  
Princeton University

**10:15-10:45** **Coffee Break: Mix and mingle with Manjul Bhargava**

Proshansky Auditorium,  
The Graduate Center, CUNY

**10:45-** *Mathematical Explorations  
and Visualizations with  
Processing*  
**11:10**  
Roger Antonsen  
University of Oslo

**11:20-** *Rectilinear and Polyomino*  
**11:45** *Knot Projections*  
Joseph Malkevitch  
York College (CUNY)

The Graduate Center, CUNY, C201/202

**10:45-** *Chutes and Ladders without*  
**11:10** *Chutes or Ladders*  
Darren Glass  
Gettysburg College

**11:20-** *Optimal Strategies for*  
**11:45** *Straights in Yahtzee*  
John McSweeney  
Rose-Hulman Institute  
of Technology

The Graduate Center, CUNY, C198

**10:45-** *Binary Bugs*  
**11:45** *Family Workshop*  
(All ages)  
Melissa Silk  
University of Technology  
Sydney

The Graduate Center, CUNY, C205

**10:45-** *The Art of Cryptography*  
**11:15** (Middle school and up)  
Elana Reiser  
St. Joseph's College

**11:25-** *Fun with Fillomino*  
**12:10** (Middle school and up)  
Walker Anderson  
Central Bucks West High School

**12:10-1:25** Lunch, on your own;  
see deals and discounts  
at back of program.

Keep the magic of math going  
all year long!  
Join **MO MATH** today!



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NATIONAL MUSEUM OF MATHEMATICS  
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## Tuesday Afternoon

### Proshansky Auditorium, The Graduate Center, CUNY

- 1:30-** *Engel Machines*  
**1:55** James Propp  
Mathematical Enchantments
- 2:05-** *Penney's Roulette*  
**2:30** and *Martingales*  
Robert Vallin  
Lamar University
- 2:30-** Coffee Break/  
**3:15** Problem Sharing
- 3:25-** *Probability Magic*  
**3:50** Peter Winkler  
Dartmouth College

### The Graduate Center, CUNY, C201/202

- 1:30-** *Sudoku Ripeto and*  
**1:55** *Custom Sudoku*  
Miguel Palomo  
Universidad Politécnica  
de Madrid
- 2:05-** *Edgy Puzzles*  
**2:30** Karl Schaffer  
De Anza College
- 2:30-** Coffee Break/  
**3:15** Problem Sharing
- 3:25-** *Finite Group KenKen*  
**3:50** David Nacin  
William Paterson University

### The Graduate Center, CUNY, C203/204

- 1:30-** *Vennim!*  
**1:55** Alex Meadows  
St. Mary's College of Maryland
- 2:05-** *Graph Coloring Games, Col,*  
**2:30** *and Nimmers*  
Wing Hong Tony Wong  
Kutztown University  
of Pennsylvania
- 2:30-** Coffee Break/  
**3:15** Problem Sharing
- 3:25-** *Algebra Game:*  
**3:50** *Mathematics, Algorithms,*  
*and Use in Mathematics*  
*Festival*  
Chee Wei Tan  
City University of Hong Kong

### Closing Presentations

#### Proshansky Auditorium, The Graduate Center, CUNY

- 4:00-** *The BINGO Paradox*  
**4:25** Art Benjamin  
Harvey Mudd College
- 4:30-** **Concluding Remarks**  
**4:45** Cindy Lawrence, MoMath

### Activity Fair

#### The Graduate Center, CUNY, C198/C205 1:30-4:00

- Polygon Puzzles —*  
*Assembly and Creation*  
Rebecca Klemm, NumbersAlive!
- Sugihara's Impossible Cylinder*  
Dave Richeson, Dickinson College
- Math with Young Children: Using an*  
*Understanding of Math Development*  
*to Play Mathematical Games*  
Milenis Gonzalez  
and Jennifer Woodruff  
Bank Street College of Education
- Sierpinski Gaskets*  
*and the Chaos Game*  
Maura Murray and Julie Belock  
Salem State University
- Chickpea-Toothpick Building Sets*  
Jane Kats and Tatiana Ter-Saakov  
Moscow Center of Continuous  
Mathematical Education,  
Independent University of Moscow
- Playful Geometry:*  
*A Flexagon Workshop*  
Ann Schwartz

The National Museum of Mathematics  
wishes to thank the following  
MOVES supporters:



**TWO SIGMA**

Alexander Scott Graphics, Inc.  
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math 4 love  
Princeton University Press  
Product of Design  
Tessellations (The Dice Lab)  
ThinkFun

## MOVES Conference Committee

Josh Laison, Willamette University  
Robert W. Vallin, Lamar University

Cindy Lawrence, Executive Director & CEO, MoMath

Bruce Bayly, University of Arizona  
Tim Chartier, Davidson College  
Tanya Khovanova, MIT

Ron Lancaster, University of Toronto  
Tony Nance, Ohio State University  
Lamar Widmer, Messiah College

## Recommended eateries near CUNY

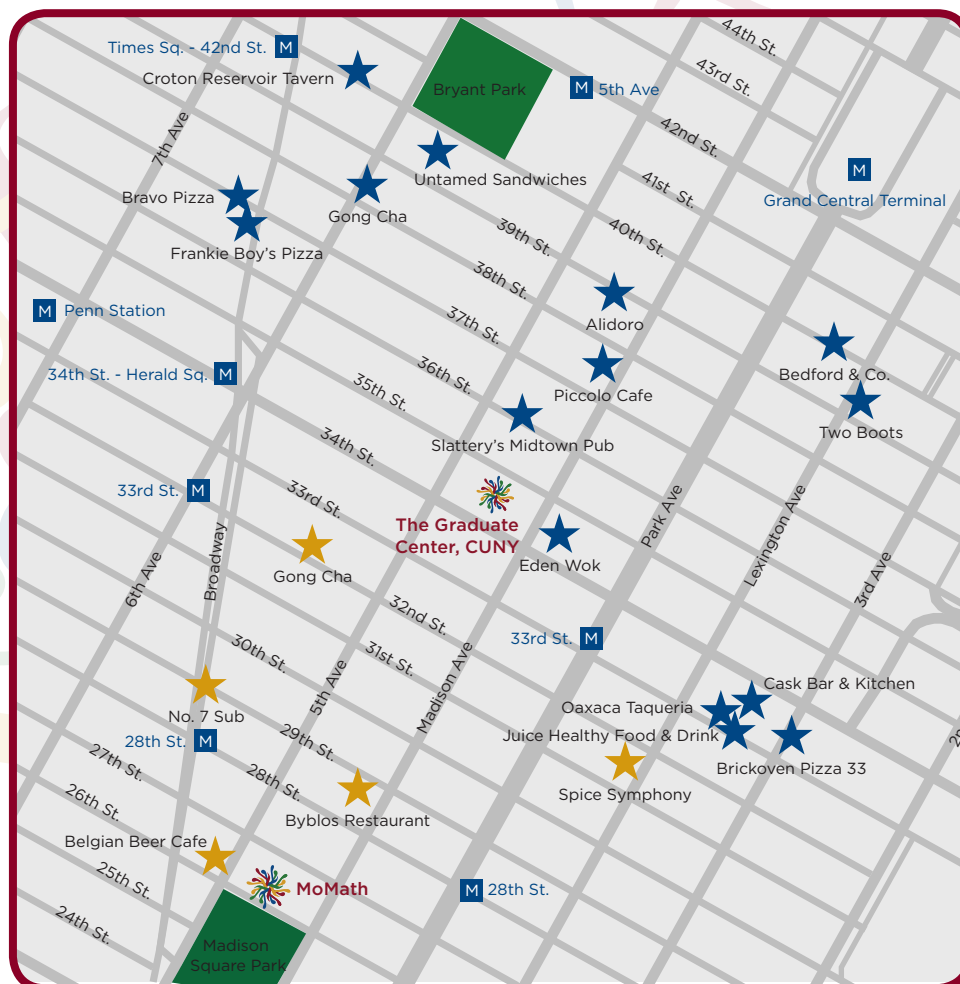
Show your MOVES badge to receive the following discounts:

- Alidoro** - 18th E. 39th St. between 5th & Madison Aves - Italian sandwich shop, coffee & tea - **10% off**
- Bedford & Co.** - 118 E. 40th St. between Park & Lexington Aves (inside Renwick Hotel) - American restaurant - **\$5 off**
- Bravo Pizza** - 107 W. 37th St. between 6th Ave & Broadway - Kosher pizza & salad - **Buy one slice, get one slice (of equal or lesser value) free with purchase of soda**
- Brickoven Pizza 33** - 489 3rd Ave between 33rd & 34th Sts - Thin crust, brick oven pizza - **Buy 2 slices, get one 16 oz. soda free**
- Cask Bar & Kitchen** - 167 E. 33rd St. between Lexington & 3rd Aves - American restaurant - **10% off in the dining room**
- Croton Reservoir Tavern** - 108 W. 40th St. between 6th Ave & Broadway - Modern American cuisine & bar - **15% off**
- Eden Wok** - 43 E. 34th St. between Madison & Park Aves - Kosher Chinese & sushi platters - **25% off in store**
- Frankie Boy's Pizza** - 1367 Broadway between 36th & 37th Sts - Italian pizza, pasta, & salads - **Buy one slice, get one slice (of equal or lesser value) free with purchase of soda**
- Gong Cha** - 75 W. 38th St. between 5th & 6th Aves - Bubble tea - **20% off drink purchase (except between 12 - 2 pm)**
- Juice Healthy Food & Drink** - 156 E. 33rd St. between Lexington & 3rd Aves - Health-focused juice bar & smoothies, sandwiches & wraps - **Buy one smoothie or juice, get the second 50% off**
- Oaxaca Taqueria** - 152 E. 33rd St. between Lexington & 3rd Aves - Fresh, organic, sustainable Mexican - **10% off**
- Piccolo Cafe** - 238 Madison Ave between 37th & 38th Sts - Italian restaurant, homemade pasta, panini & specialty coffee - **20% in store**
- Slattery's Midtown Pub** - 8 E. 36th St. between 5th & Madison Aves - Irish pub & sports bar - **12% off lunch special with complimentary drink (drink/mixed drink/beer/wine between 11am - 3pm, 20% off all food 3pm - midnight)**
- Two Boots** - 337 Lexington Ave between 37th & 38th Sts - NYC pizza with quirky Cajun toppings - **Free soda or bottled water with either purchase of 2 slices of pizza OR purchase of Traditional Jambalaya (gluten free)**
- Untamed Sandwiches** - 43 W. 39th St. between 5th & 6th Aves - Inventive sandwiches & sustainability - **Free lemonade, iced tea, or coffee with purchase of a sandwich, salad, plate, or breakfast sandwich**

## Recommended eateries near MoMath

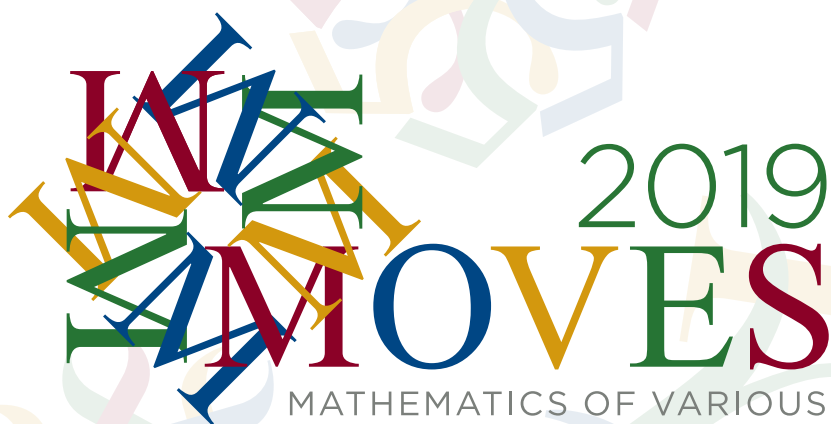
Show your MOVES badge to receive the following discounts:

- Belgian Beer Cafe** - 220 5th Ave at the corner of 26th St. - Belgian cuisine & expert beer pairings - **Free draft beer with the purchase of an entree**
- Byblos Restaurant** - 80 Madison Ave between 28th & 29th Sts - Modern Lebanese cuisine - **10% off**
- Gong Cha** - 12 W. 32nd St. between Broadway & 5th Ave - Bubble tea - **20% off drink purchase (except between 12 - 2 pm)**
- No. 7 Sub** - 1188 Broadway (inside Ace Hotel) - Modern, hip gourmet sandwich shop - **10% off**
- Spice Symphony** - 182 Lexington Ave between 31st & 32nd Sts - Indian & Chinese fusion - **20% off (tax and tip excluded)**





**Save the date!**



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[moves.momath.org](http://moves.momath.org)

**August 4-6, 2019**