

## **MoveSpeakSpin**

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### ***The Daughters of Hypatia*** ***Circles of Mathematical Women***

**A dance concert about great women mathematicians throughout history, and their struggles to create groundbreaking mathematics; upcoming performances in Santa Cruz and Fresno**

Women's contributions to mathematics have historically been given short shrift. Mathematician and dancer/choreographer Karl Schaffer highlights these contributions in a concert dedicated to the foremothers of mathematics as well as to their leading contemporaries. For centuries women were denied access to the study of mathematics, their intellectual powers denigrated, and their accomplishments downplayed. However, women, often self taught, made marvelous mathematical discoveries, even when obstacles were placed in their way. The earliest known female mathematician was Hypatia, a leading intellectual in ancient Alexandria who was murdered by a mob. Later mathematicians disguised their identities: Émilie du Châtelet dressed as a man in order to attend lectures, Sophie Germain published under a male pseudonym, and Emmy Noether gave lectures under the name of a male colleague. Their stories are sobering, yet inspiring.

The historical sections of the show are drawn together by dances exploring circular motifs, suggesting the circles of support and connection that have nurtured women in this field. The dancers recount intriguing stories from the women's lives and perform patterns suggestive of their mathematical work. Dance works also make use of live projection of video mosaics of dancers with software created by Kevin Lee, feature tessellation designs by Marjorie Rice, include guest choreography by sarah-marie belcastro, and use musical compositions by Zambra, Vi Hart, and Victor Spiegel.

Several past works have been integrated into the show as well, including "A Circle Has No Sides" – a duet investigating the circle, set to a piano score by "mathemusician" Vi Hart. Also in the concert are "Trio for Six," a trio for six hands, "Inside/Outside," which also plays with oversize hoops, and "Tottle Bop," a rhythm dance using plastic water bottles. A new work, "Dr. Jones," adapts a text by Sue Geller on micro-inequities suffered by women in mathematics.

Featured mathematicians include Hypatia, Maria Agnesi, Émilie du Châtelet, Sophie Germain, Sofia Kovalesky, Marjorie Rice, Emmy Noether, and sarah-marie belcastro. sarah-marie belcastro (lower case), who currently teaches at Sarah Lawrence College, has worked with Karl Schaffer on dances and a recent article in *The Best Writing on Mathematics 2012*, and has published two books on mathematics and fiber arts.

**Karl Schaffer** is co-artistic director of the Dr. Schaffer and Mr. Stern Dance Ensemble, which performs under the auspices of MoveSpeakSpin. The Ensemble has performed throughout North America for over twenty five years. They recently performed at the newly opened Museum of Mathematics in New York, in Buffalo, at TEDx, in Madison, and in Columbus, and in Seoul Korea last summer. Schaffer and Stern are on the Teaching Artist Roster of the Kennedy Center Partners in Education Program for their work integrating dance and mathematics. Schaffer served as an alternate choreography adjudicator in the 2011 National Society of Arts and Letters National Choreography Competition, is a Participatory Performing Artist in Residence at the Santa Cruz Museum of Art and History for 2014-15, and and teaches both dance and mathematics.

**Zambra** is a Santa Cruz women's global vocal music ensemble which performs songs in over 15 languages and has collaborated with Karl Schaffer on two previous shows. Zambra performed live in Mosaic, a show which Schaffer previewed in June 2011 and in Harmonious Equations with NPR Math Guy, Keith Devlin. "Mathmusician" **VI Hart**, 's videos integrating math, music, and zany humor have recently become an internet sensation. Kevin Lee has created software for interactive design of tessellations, including the "hit" software Tesselmania. Marjorie Rice is a well known amateur mathematician who discovered a number of pentagonal tilings of the plane, and created Escher-like designs based on them. [sarah-marie belcastro](#) is a mathematician who is also a dancer and authority on the mathematics of knitting and crochet. [Victor Spiegel](#) is a musician and composer in a variety of world music forms. The performance also includes choreographic contributions by the four dancers in the show.

**Dancers** performing in the show are:

**Jane Real**- MA Dance, MS Elementary Education. Formerly Rehearsal Director and performer with Bill T. Jones/ Arnie Zane and Co., Director of the Dance Network of Brooklyn, NY, and member of K2 Dance andArts CO, Jane recently performed with Tandy Beal and Company. and teaches dance in Santa Cruz City Schools. She has danced with MoveSpeakSpin since 2011.

**Saki** has performed and taught dance, circus arts, theatre and gymnastics with Tandy Beal & Company, New Pickle Circus, West Performing Arts with Terri Steinmann, Gymnastics Learning Center at Santa Cruz Sports Central and for ten years with the Dr. Schaffer & Mr. Stern Dance Ensemble.

**Lila Salhov** has a B.F.A. in Dance from Boston Conservatory, has performed as a member of the Windhover Dance Company in Boston and Jessica Danser/dansfolk in New York City, has been on faculty at Ballet Hispanico and the Marymount School in Manhattan, and currently dances and teaches in the Bay Area. She has danced with MoveSpeakSpin since 2011.

**Laurel Shastri** served 17 years at Ballet Tennessee in Chattanooga, as Associate Director, company dancer, and faculty. She has an MS in Geology, and is a teaching artist specializing in dance integrated curriculum based lessons. A newcomer to Santa Cruz, this is her first performance in Santa Cruz. She has danced with MoveSpeakSpin since 2013.

#### **Upcoming performances:**

Green Acres School, Santa Cruz, Friday, Nov. 7, 2014

Sonia Kovalesky Mathematics Day, California State University, Fresno, Saturday, Nov. 8, 2014

#### **Recent performances:**

West End Studio Theatre, Santa Cruz, April 7-13, 2014 (nine performances)

**More information:** [movespeakspin.org](http://movespeakspin.org)

**Text and choreography** by Karl Schaffer, guest choreography and performance by sarah-marie belcastro, choreographic contributions by the dancers. Music by VI Hart, Zambra, Bobby McFerrin, Victor Spiegel. Additional text adapted from script by Sue Geller.

**Tessellation designs** by Marjorie Rice.

**Video mosaic software** by Kevin Lee.

**Photos** by [Steve DiBartolomeo](#).



**PROUD SUPPORTER**

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