

August 26, 2021

## Yaiza Canzani to be awarded the 2022 AWM Sadosky Research Prize

The 2022 AWM Sadosky Research Prize in Analysis is awarded to **Yaiza Canzani** in recognition of outstanding contributions in spectral geometry and microlocal analysis.

**Citation:** Canzani has established herself as a leading expert in spectral geometry, producing breakthrough results on nodal sets, random waves, Weyl Laws,  $L^p$ -norms, and other problems on eigenfunctions and eigenvalues on Riemannian manifolds. Over the past three years, in collaboration with Galkowski, Canzani developed a framework to extract information on the structure of Laplace eigenfunctions from their concentration and propagation behavior in phase space. The outcome of this endeavor is a series of works that are the first to provide quantitative improvements over the standard bounds, under purely dynamical assumptions, for pointwise bounds,  $L^p$ -norms, integral averages, and the error term in the pointwise Weyl Law. Canzani's work is ground-breaking and further development of her framework will continue to greatly advance the field. Canzani, in collaboration with Hanin, carried out a detailed study of scaling limits of the spectral function of the Laplacian, successfully answering Zelditch's scaling asymptotics conjecture and applying it to prove local universality properties of nodal sets. Her work has opened up the possibility to study random waves on general manifolds; previous techniques had restricted their study to specific



classes such as the sphere or the torus. In a beautiful paper with Sarnak, Canzani studied the topology and nesting configurations of the zero sets of monochromatic random waves. Such results seemed quite out of reach even to the leading experts in the area, but Canzani's technical brilliancy and new ideas made it possible to obtain them.

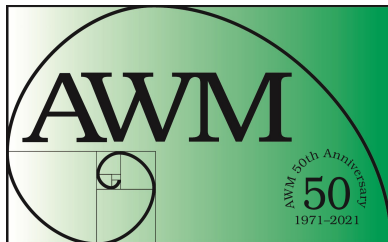
Canzani's publication record is stellar, with already 24 articles of impressive breadth in top journals. Similarly impressive is the number of worldwide invited talks she presented at distinguished events. After receiving her Ph.D. from McGill University in 2013, she held postdoctoral positions at Harvard University and the Institute for Advanced Studies. In 2016 she joined UNC Chapel Hill as a tenure-track Assistant Professor of Mathematics and was later awarded the prestigious Sloan Research Fellowship and an NSF Career Award.

Canzani is a remarkable young mathematician whose ground-breaking and original work has greatly impacted the mathematical community and she continues working on a host of exciting and ambitious new projects that she is well equipped to attack. Canzani undoubtedly deserves the recognition that the AWM-Sadosky Prize provides.

**Response from Yaiza Canzani:** I am honored and delighted to receive the AWM-Sadosky Research Prize in Analysis. It is a particular

Association for Women in Mathematics

P.O. Box 40876 • Providence, Rhode Island 02904  
401.455.4042 • awm@awm-math.org • www.awm-math.org



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privilege to receive an award commemorating Cora Sadosky. And I am truly gratified to be awarded a prize by the AWM whose effort to promote equal opportunity plays a key role in the future of our profession.

I am deeply grateful to all of my mentors throughout the years for their support, advice, and guidance. Federico Rodriguez-Hertz, my undergraduate mentor, was instrumental in advancing my career by helping me both find a Ph.D. position and prepare to succeed in it. Dmitry Jakobson and John Toth, my teachers

and mentors during my Ph.D., have become good friends and collaborators. Working with them is a joy. In addition, during my postdoc, I had the good fortune to work with Peter Sarnak who continues to provide invaluable guidance and share his talent and passion for mathematics.

Finally, I would like to thank my colleagues and collaborators who support and promote my work. I am especially grateful to Jeff Galkowski and Jason Metcalfe.

*Established in 2012, the AWM Sadosky Research Prize recognizes exceptional research in analysis by a woman early in her career. The award is named for Cora Sadosky, a former president of AWM, and is made possible by generous contributions from Cora's husband Daniel J. Goldstein, daughter Cora Sol Goldstein, and friends Judy and Paul S. Green and Concepción Ballester. The 2022 award will be presented at the Joint Mathematics Meetings in Seattle, WA from January 6 - 9. The 2022 award was recommended by a select committee of Daniela De Silva (Chair), Maria Pia Gualdani, Anna Mazzucato, and Malabika Pramanik.*

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401.455.4042 • [awm@awm-math.org](mailto:awm@awm-math.org) • [www.awm-math.org](http://www.awm-math.org)