CITATION

Noah Kravitz

Noah Kravitz of Yale University is recognized with an Honorable Mention for the 2021 Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student. He has nine papers published, many single authored, in top journals such as the *Journal of Number Theory*, *Discrete Mathematics*, *The Journal of Fourier Analysis and Applications*, and *Integers*. He has made significant progress on "very central and well-studied problems", including the Small Ball Inequality—where he improved upon the current understanding of the problem by leading experts in the field—and the Lonely Runner Conjecture—where he "discovered an unexpected rigidity in the problem". Additionally, he has developed an asymptotic theory of difference bases and shown that the problem is completely equivalent to a problem in Real Analysis using a "very sophisticated mixture of combinatorial, probabilistic and analytical arguments".

Biographical Note

Noah Kravitz was born and raised in Washington, DC, where he attended Georgetown Day School. In 2020, he graduated from Yale College summa cum laude and junior Phi Beta Kappa with Exceptional Distinction in both of his majors, Mathematics and Near Eastern Languages and Civilizations. His two senior theses treated the Lonely Runner Problem and the development of medieval Arabic number theory, respectively. Noah is now pursuing a Ph.D. in mathematics at Princeton University. He has broad interests in combinatorics and adjacent fields, and recently he has been particularly drawn to combinatorial problems with an additive or number-theoretic flavor.

Noah was interested in mathematics from a young age and participated in local mathematics competitions in high school. His first foray into mathematical research came during his freshman year at Yale, and he learned more about the research process when he attended the Research Experiences for Undergraduates (REU) program at the University of Minnesota, Duluth in the summer after his sophomore year. At Yale, Noah was an organizer and the chief problem writer for the Math Majors of America Tournament for High Schools and Girls in Math at Yale annual competitions for high-school students. Noah is a U.S. Presidential Scholar, a Goldwater Scholar, a National Science Foundation Graduate Research Fellow, and the winner of Yale's Warren Prize (for high scholarship in the humanities). His non-mathematical academic interests include languages, philology, philosophy, literary translation, and the history of science. Outside of academics, Noah plays the piano and the carillon and enjoys long-distance running.

Response from Noah Kravitz

It is a great privilege to receive an Honorable Mention for the Morgan Prize. I would like to thank a few (but necessarily not all) of the many people who helped me reach this point: Andy Lipps, my high-school calculus teacher, for teaching me about the possibilities of math beyond the classroom and taking the time to challenge me with a near-constant stream of interesting problems; Stefan Steinerberger, my adviser at Yale, for introducing me to mathematical research and providing sage advice, steady encouragement, and insightful ideas for research projects; Joe Gallian, for running a wonderful REU program and supporting me through my subsequent endeavors; Gil Kalai, for giving me the confidence to try my hand at hard open problems; my parents, for patiently listening to me talk about math, even at inopportune times; and my peers and research collaborators, for spending hours poring over problems and attempted solutions.