

Clarkson University

Mathematics REU Speaker Series

Summer 2022

Friday July 8, 2022 @ 11 am in SC 160

Attend the talk via zoom:
<https://clarkson.zoom.us/j/98680644309>

The Secret Lives of Mathematicians

Mathematics can be more than just a subject in school; it can be a career. The government is the number one single employer of mathematicians in the country. Many of those mathematicians end up at the National Security Agency, where they find careers in research, information assurance, and cryptanalysis. This talk will be an introduction to the roles of mathematicians at NSA, as well as basics of cryptography..

Kelsey Wells, Ph. D.

Dr. Kelsey Wells recalls enjoying math from a young age. In elementary school she loved beating the other students in math games, but as she moved into middle and high school she started to turn her competitiveness into compassion and worked to encourage and help her classmates. Inspired by watching friends and family struggle with math, she began a degree in Mathematics Education at Brigham Young University-Idaho, forever cementing her role as math homework helper for siblings, cousins, and all their kids. While taking one of her first proof-based classes her professor often spoke poetically about all the math available to explore outside of a math education degree, motivating Dr. Wells to change to an Applied Mathematics major. With a new goal of attending graduate school to learn more about the vast landscape of mathematics, she attended the SUNY Potsdam/Clarkson REU studying the growth of finitely generated algebras. Under the excellent organization of Dr. Joel Foisy and wonderful mentorship of Dr. Harold Ellingsen, her group published a paper drastically improving an upper bound for finitely presented two-generator monomial algebras. With the addition of this research experience to her graduate school applications, Dr. Wells secured a position in the Mathematics Ph.D. program at the University of Nebraska-Lincoln. Despite originally being drawn to commutative algebra and geometric group theory, she found herself an advisor in the world of Partial Differential Equations and Continuum Mechanics. Her research focused on nonlocal Laplace-type operators capable of dealing with strong discontinuities. Applications include models for material crack growth, anomalous diffusion, and transport. After earning her doctorate she took a position at the National Security Agency where Dr. Wells has worked for the last 3.5 years as an applied research mathematician. In her presentation she will talk about what the life of a mathematician is like at NSA. In addition to math, Dr. Wells loves all things passion fruit-flavored, Brandon Sanderson, and pickle ball.



**Applied Research Mathematician
National Security Agency**



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Please contact: Guangming Yao (gyao@clarkson.edu) or James Greene (jgreene@clarkson.edu) for more information.