

SPIKY PERKO KNOT



CHAOTIC ATTRACTORS



PERKO MORPH



STAINLESS STEEL KNOTS



2021 IMA **VIRTUAL** PUBLIC LECTURE

# Coding and Generative Design for 3D Printing

**Laura Taalman, James Madison University**

3D printing and design allows us to physically experience complex mathematical objects. In this talk we'll take a 3D-printed tour of mathematical knots, tessellations, fractals, and polyhedra. Using code and generative design we can create parametric models that leverage randomness to achieve structural variety or even organic-looking behavior. We'll also talk about iterative design, the ability to "learn by failing," and the importance of being open to sharing that process, both in 3D design and in mathematical exploration.

**Tuesday, February 9, 2021 / 7 p.m.**

Registration is required to access the Zoom webinar. Please register at [z.umn.edu/IMAPublicLectureFebruary](https://z.umn.edu/IMAPublicLectureFebruary)

*For more information visit [www.ima.umn.edu](http://www.ima.umn.edu)*



**Laura Taalman** is a Professor of Mathematics at James Madison University whose published research has included algebraic geometry, knot theory, and games. Also known as "mathgrrl", Dr. Taalman is a computational designer who leverages a diverse toolbox of 3D design software and technical materials to create elegant and aesthetic realizations of idealized mathematical objects. She is a

Project NExT Fellow, a recipient of the Alder Award, Trevor Evans Award, and SCHEV Outstanding Faculty Award, and has been featured on Thingiverse, Adafruit, and Science Friday.

The Institute for Mathematics and its Applications connects scientists, engineers, and mathematicians in order to address scientific and technological challenges in a collaborative, engaging environment, developing transformative, new mathematics and exploring its applications, while training the next generation of researchers and educators.

COLLEGE OF  
Science & Engineering

UNIVERSITY OF MINNESOTA

THE UNIVERSITY OF MINNESOTA IS AN EQUAL OPPORTUNITY EDUCATOR AND EMPLOYER.