

Stanford Math Directed Reading Program Colloquium

Session II, Winter 2019

Thursday April 4, 2019, 6:30pm–8:30pm
Sloan Mathematics Center, room 380-384H (fourth floor)
Dinner available at 6:15pm

\mathbb{R} is not homeomorphic to \mathbb{R}^2

Ariella Lee

Mentor: Ipsita Datta

In this presentation, I show that \mathbb{R} is not homeomorphic to \mathbb{R}^2 . I define some terms from point-set topology and then give an explanation that goes a little like this: if there were a homeomorphism $f : \mathbb{R} \rightarrow \mathbb{R}^2$, then there would be an induced homeomorphism $\mathbb{R} \setminus \{0\} \rightarrow \mathbb{R}^2 \setminus \{f(0)\}$, but this is not possible because $\mathbb{R}^2 \setminus \{f(0)\}$ is connected but $\mathbb{R} \setminus \{0\}$ is not.

TBD

Nina Zubrilina

Mentor: Joj Helfer

Basic Properties of the Riemann Zeta Function

Niven Achenjang

Mentor: Jesse Silliman

I will discuss the Riemann Zeta function, and give an overview of how to prove it continues meromorphically to the whole complex plane as well as how to derive its functional equation. Time permitting, I may also briefly mention some of its generalizations as well as their applications.

Group Theory in Cryptography

Marilyn Zhang

Mentor: Sarah McConnell

I will show how group theory properties guarantee the security in RSA, which is a type of public key encryption.

This event was financially supported by the Vice Provost for Graduate Education through the Student Projects for Intellectual Community Enhancement (SPICE) and Diversity and Inclusion Innovation Funds (DIF) programs. The organizers would like to thank Gretchen Lantz, Rose Stauder, and Elizabeth Kay for their administrative support of the DRP.