

Arithmetic statistics for knots and knot invariants

Alison Miller

November 15, 2019

Abstract

Certain knot invariants related to the Alexander polynomial and the Seifert matrix, defined both on classical and high-dimensional knots, can be viewed as arithmetic objects and studied in the framework of arithmetic invariant theory. I will discuss this and show how it raises natural arithmetic counting questions whose answers can be interpreted as saying something about knot theory. I will go into detail on the case of knots of genus 1 and how it relates to the theory of binary quadratic forms. I will end with some partial results and speculations in higher genus.