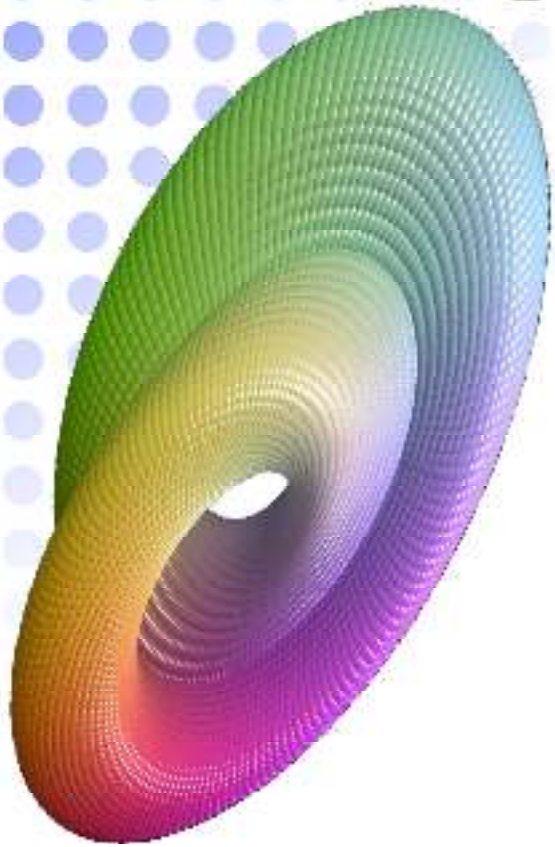
Michigan Math Club

Thursday at 4pm in the Commons

Free Pizza and Pop



The Tree of Numbers

Austin Shapiro

Abstract for 15 January

If I told you that $p/q \approx .058544$, where p and q are integers with $q<1000$, could you quickly find p and q? How can you find the best rational approximations to the square root of 2? Does the equation $3x^2 + 6xy - 5y^2 = 7$ have any integer solutions?

The answers to all these questions can be read off a remarkable structure called Conway's topograph. I will introduce this structure as a sorting tree for the rational numbers, then we'll re-imagine it as a landscape with hills, lakes, and rivers that tell us about the values and symmetries of quadratic forms.