

Fractal Sequence Analysis and Creation of Art and Music

What: Bi-State Math Colloquium

When: Thursday, November 2, 4pm

Where: Loras College, Hennessy 250

Who: Sarah Schoel

For my seminar project, I have been analyzing fractal sequences and using them to create images and to modify musical compositions. A fractal sequence has a pattern that repeats at all scales. One well-known sequence is the Thue-Morse Sequence. This sequence is created by translating the positive integers into base(2) and then adding the digits for each number and taking mod(2) of the result. This forms a pattern of zeroes and ones that continues infinitely. If consecutive numbers are put into groups of two, a unique characteristic about this sequence is revealed. When the first number of every set is kept and the second removed, the remaining numbers create the original pattern. I have shown that translating the integers into base(n) and summing digits mod(n) elicits a similar pattern. I will show how these sequences can then be translated into art and music and analyze the results.

Sarah Schoel is a senior at Loras College. This presentation is in partial fulfillment of the Loras College math major.