

Algebraic Patterns of Sudoku

What: **Bi-State Colloquium**

When: **Wednesday, October 30, 4pm**

Where: **Loras College, Hennessy 250**

Who: **Nicole Feldhaus**

3	1	2	4
2	4	1	3
1	3	4	2
4	2	3	1

We will explore the algebraic patterns and structures that are found in Sudoku puzzles by examining their structural makeup. As is common in math research, I will begin with a simpler example, the Mini-Sudoku, to find generalizations, observations, and patterns that I then hope to apply back to a more complex example such as the traditional 9x9 Sudoku. I will examine the Mini-Sudoku from both a modern algebraic perspective through symmetries as well as a linear algebraic perspective through linear combinations and determinants. I will share my observations and conclusions on various patterns, equivalencies, conjectures, and proofs amongst the Mini-Sudoku puzzles.

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