Graduate Student Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

Speaker: **Sebastian Bozlee**
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Monday, March 21, 2016
4:00 pm
Room: 229 Hayes-Healy Hall

Title: A connection between recurrence sequences and affine schemes

Abstract:
Linear homogeneous recurrence sequences are sequences (a_j) satisfying equations of the form $a_j = c_1 a_{j-1} + ... + c_k a_{j-k}$. Common examples of such sequences are geometric sequences, which satisfy $a_j = r a_{j-1}$, and the Fibonacci sequence, which satisfies the recurrence $a_j = a_{j-1} + a_{j-2}$. A standard result on the solutions of recurrence sequences implies that solution sets to recurrence relations admit a one-to-one correspondence to closed subschemes of the affine scheme A^1. Tantalized by this correspondence, we ask if there are similar correspondences for different recurrence problems with closed subschemes of other affine schemes. In this talk, we will answer this question in the affirmative, explore the benefits of this geometric perspective, and raise other questions.