

# Algebra Seminar

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1:00p.m., HH-3017

*Jordan Loops and Loop Rings: A Mix of Combinatorics and Algebra*

**Abstract:**

Think of a loop as a group which is not necessarily associative. So the multiplication table of a loop is nothing but a standard Latin square. In this talk, we study loops that are Jordan in the sense that they are commutative and satisfy the Jordan identity:  $(x^2y)x = x^2(yx)$ . We also discuss a subclass of Jordan loops we call RJ for "ring Jordan," these being loops whose "loop rings" are also Jordan. We describe ways to construct finite Jordan loops and finite RJ loops. Our method involves finding Latin squares whose entries satisfy certain functional equations on an abelian group. We find some solutions, but wish we had more. There are a number of open combinatorial problems associated with this work.