



# Algebra/Topology Seminar

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## TURING MACHINES, AUTOMATA, AND THE BRIN-THOMPSON GROUP $2V$

Thursday, November 14, 2013  
1:15 p.m. in ES-143

ABSTRACT. The torsion problem for a finitely presented group asks whether a given word represents an element of finite order. In this talk, I will present a concrete example of a group with solvable word problem but unsolvable torsion problem. This group is known in the literature as  $2V$ , and was introduced by Matt Brin in 2004 as a variant on Thompson's group  $V$ . As a consequence, I will show that there is no algorithm to determine whether a given asynchronous transducer defines a transformation of finite order. This is joint work with Collin Bleak.