

**Institute for Mathematics and its Applications**  
**2012 Seminar Series**  
University of Wollongong

**Title:** Finding short words in the first Grigorchuk group

**Speaker:** Murray Elder (University of Newcastle)

**Time and Date:** 3:30pm, Wednesday 21 March 2012

**Location:** Room 19.1038

**Abstract:** In the 80's R.Grigorchuk produced a finitely generated group such that the number of elements that can be written as a product of at most  $n$  generators grows faster than any polynomial in  $n$ , but slower than any exponential in  $n$ , so-called "intermediate" growth. Grigorchuk's group can be described as an group of automorphisms of an infinite rooted binary tree, or in terms of abstract computing devices called "non-initial finite transducers". In this talk I will describe what some of these short words/products of generators look like, and speculate on the asymptotic growth rate of all short words of length  $n$ . This is joint work with Mauricio Gutierrez (Tufts), Zoran Sunic (Texas A&M) and Christopher Townsend (Newcastle).