

## Debra Waugh (Alfred University)

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### The Order Dimension of Bruhat Order

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#### Abstract for the Combinatorics and Number Theory Seminar 2003 May 6

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I consider the order dimension of infinite Coxeter groups under strong Bruhat order. In particular, I show that the order dimension of the affine Coxeter group  $A_n$  is at least  $n(n+1)$ . To accomplish this, I exhibit an antichain of certain special elements called dissectors. I describe these dissectors in terms of rectangles within a specified array of generators in order to establish that we have an antichain and count its elements. I then use the fact that the order dimension  $\dim(P)$  of a finitary poset  $P$  is at least the width of the subposet  $\text{dis}(P)$  of its dissectors.

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