# "Dashed Pattern Avoidance" in Coxeter Groups

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Dashed patterns in permutations were introduced by Babson and Steingrimsson. For example, a permutation $\sigma$ contains the pattern $(1-32)$ if $\sigma = [\ldots, a, \ldots, c, b, \ldots]$ for some $a < b < c$. Connections between the number of permutations avoiding $(1-32)$ – and various combinatorial objects, like the Bell and the Stirling numbers, as well as the number of left-to-right-minima in permutations were proved by Claesson.

Coxeter groups are defined by a certain very simple presentation; their alternating subgroups consist of all elements of even length. Coxeter like presentations of these subgroups may be obtained by contracting edges in Dynkin diagrams. The resulting length and descent functions lead to extensions of old and new permutation statistics phenomena.

In this talk we will focus on extending the $1-32$ dashed pattern avoidance to groups with Coxeter like presentations. Permutations avoiding $1-32$ are exactly those for which the descent number is equal to the number of left-to-right-minima. Observing that a the number of left-to-right-minima in a permutation is equal to the number of "long" factors in its canonical flag presentation, leads to a "natural" extension of the dashed pattern avoidance to general Coxeter groups, wreath products (also known as colored permutation groups) and alternating groups. Generalized Stirling numbers and equidistribution identities result.

The talk is based on a joint work with Amitai Regev. Recent results joint with Francesco Brenti, Ron Adin, Jeff Remmel and Vic Reiner will be mentioned.