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Nathan Reading* (nathan_reading@ncsu.edu), Mathematics, Harrelson Hall 225, Box 8205, NCSU Campus, Raleigh, NC 27695. *The algebra and geometry of sortable elements.*

The context for this research is formed by observations, made by various researchers over the past 10 years, that several constructions related to a finite Coxeter group W yield sets counted by the “ W -Catalan number.” (This number generalizes the usual Catalan number; the latter appears in the special case where W is the symmetric group.) Among the sets counted by the W -Catalan number are the W -noncrossing partitions (which play a role in the study of Artin groups) and the clusters of almost positive roots, which are the combinatorial backbone of cluster algebras of finite type.

Sortable elements constitute a subset of W , defined in terms of the combinatorics of reduced words for W , but motivated by the lattice theory of the weak order on W . They are counted by the W -Catalan number, and furthermore, there are simple bijections from sortable elements to noncrossing partitions and to clusters. In particular, one can construct the fan of clusters (dual to the generalized associahedron for W) entirely in the language of sortable elements.

The talk will be introductory, with examples and some statements of (or allusions to) main results. (Received September 11, 2006)