Math 996, Fall 2008
Final Project

The assignment: Read a research paper on some topic involving Coxeter groups, and give a 20-minute talk to the class. Your talk should be as *self-contained* as possible; that is, it should be intelligible to someone familiar with most of chapters 1–4 and 7 of Björner and Brenti. You can choose one of the papers listed below, or select your own. In either case, let me know which paper you want to read. No two students should have the same paper, so I'll mark with • the ones that have been claimed (first come, first served).

I've grouped the papers roughly by topic. Electronic versions of all papers are available (click on the journal citation or arXiv identifier).

Enumeration

• C.A. Athanasiadis, "On a refinement of the generalized Catalan numbers for Weyl groups",
Trans. Amer. Math. Soc. 357 (2005), no. 1, 179–196. [**Taken by Flavio**]

• N. Eriksen, R. Freij, and J. Wästlund, "Enumeration of derangements with descents in prescribed positions",
arXiv:0811.1925.
[**Taken by William**]

A. Fink and B. Giraldo, "Bijections between noncrossing and nonnesting partitions for classical reflection groups",
arXiv:0810.2613.

V. Reiner, "The distribution of descents and length in a Coxeter group",
Electron. J. Combin. 2 (1995), Research Paper 25, 20 pp.

S. Viswanath, "On growth types of quotients of Coxeter groups by parabolic subgroups",
Comm. Algebra 36 (2008), no. 2, 796–805.

Flag and Schubert varieties

V. Reiner, A. Woo, and A. Yong, "Presenting the cohomology of a Schubert variety",
arXiv:0809.2981.

A. Woo and A. Yong, "When is a Schubert variety Gorenstein?",
Adv. Math. 207 (2006), no. 1, 205–220.

Bruhat and weak orders

N. Reading and D. Waugh, "The order dimension of Bruhat order on infinite Coxeter groups",
Electron. J. Combin. 11 (2004/06), no. 2, Research Paper 13, 26 pp.

N. Reading, "Lattice and order properties of the poset of regions in a hyperplane arrangement",
Algebra Universalis 50 (2003), no. 2, 179–205.

• J. Sjöstrand, "Bruhat intervals as rooks on skew Ferrers boards",
J. Combin. Theory Ser. A 114 (2007), no. 7, 1182–1198.
[**Taken by Tom**]

Other structural properties of Coxeter systems

E. Babson and V. Reiner, "Coxeter-like complexes",
Discrete Math. Theor. Comput. Sci. 6 (2004), no. 2, 223–251.

• F. Brenti, V. Reiner, and Y. Roichman, "Alternating subgroups of Coxeter groups",
J. Combin. Theory Ser. A 115 (2008), no. 5, 845–877. [**Taken by Brandon**]

P. Hersh, "Shelling Coxeter-like complexes and sorting on trees",
arXiv:0809.2414.

A. Hultman, "Twisted identities in Coxeter groups",
J. Algebraic Combin. 28 (2008), no. 2, 313–332.

• A. Hultman, "The combinatorics of twisted involutions in Coxeter groups",
Trans. Amer. Math. Soc. 359 (2007), no. 6, 2787–2798.
[**Taken by Brian**]

• A. Knutson and E. Miller, "Subword complexes in Coxeter groups",
Adv. Math. 184 (2004), no. 1, 161–176.
[**Taken by Branden**]

K. Ragnarsson and B. Tenner, "Homotopy type of the Boolean complex of a Coxeter system",
arXiv:0806.0906.

N. Reading and D. Speyer, "Sortable elements in infinite Coxeter groups",
arXiv:0803.2722.