SHI ARRANGEMENTS AND LOW ELEMENTS IN COXETER GROUPS

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Abstract. The m-Shi arrangement for an arbitrary Coxeter system (W, S) and a nonnegative integer m is a refinement of the Coxeter hyperplane arrangement of the system. The classical Shi arrangement (m = 0) was introduced in the case of affine Weyl groups by Shi to study Kazhdan- Lusztig cells for W. In two key results, Shi showed that each region of the classical Shi arrangement contains exactly one element of minimal length in W and that the union of their inverses form a convex subset of the Coxeter complex. In this talk, we will discuss generalizations of Shi's results to arbitrary Coxeter systems. This is joint work with Dyer, Hohlweg, and Mark.