

On the cyclically fully commutative elements of Coxeter groups

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Abstract: Let W be a Coxeter group. We say that $w \in W$ is cyclically fully commutative (CFC) if every cyclic shift of every reduced expression for w is fully commutative (in the sense of Stembridge). This definition is motivated by the conjugacy problem, because a cyclic shift of $w \in W$ is simply conjugation by the shifted generator. An element w in an infinite irreducible Coxeter group is said to be logarithmic if $\ell(w^k) = k\ell(w)$ for all $k \geq 1$. Speyer recently proved that Coxeter elements are logarithmic. In this talk, we will discuss one of our recent results that shows that for a large class of Coxeter groups, including all affine Weyl groups, CFC elements are logarithmic. This result gives credence to the idea that CFC elements are a natural generalization of Coxeter elements, and we outline the significance of this result to current and future work on the conjugacy problem for Coxeter groups.