

GRADUATE SEMINAR

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Schurian Association Schemes For Parabolic Subgroups of Coxeter Groups

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via Zoom

Abstract:

Let G be a group, H be a subgroup of G , and $G//H$ be the set of double cosets of H in G . A double coset HgH for $g \in G$ is called *involutive* if there is a $w \in G$ with $w^2 = 1$ such that $HwH = HgH$. When all of the double cosets of a finite subgroup H in a group G are involutive, then the double coset algebra $\mathbb{C}[G//H]$ will be commutative. But the converse is not true in general. In this talk I will review the proof of Curtis, Iwahori, and Kilmoyer that for a finite Coxeter group G and a parabolic subgroup H of G , $\mathbb{C}[G//H]$ is commutative if and only if every $HgH \in G//H$ is involutive.

We can explore the same problem for infinite affine Coxeter groups. For an affine string Coxeter group G and its maximal parabolic subgroup H_a , Alsairafi and Herman showed all of the double cosets in $G//H_a$ can be obtained using the "appending single "a" prefixes" approach, and used it to establish the involutive double cosets property holds in this situation for the groups of type \tilde{C}_2 and \tilde{G}_2 . In this talk we will see how the same approach can be used to show the involutive double cosets property also holds in this situation for the groups of type \tilde{F}_4 and $\tilde{C}_n, (n > 2)$.