On the centre of Iwahori–Hecke algebras

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Abstract

Iwahori–Hecke algebras $\mathbb{C}_{\mathbf{q}}(W)$ are deformations of the group algebra of a Coxeter group W. They are intimately related with the representation theory of groups with a BN-pair whose associated building is locally finite (such as Kac–Moody groups over finite fields). We recently proved that the centre of $\mathbb{C}_{\mathbf{q}}(W)$ is trivial (in the sense that it only consists of the constant functions) whenever W is of (irreducible) indefinite type — when W is of finite or affine type, this is not true anymore. This is a consequence of a purely Coxeter group-theoretic result on conjugacy classes of W.

After reviewing the context and motivation for this latter result, I will explain the key ideas behind its (partly geometric, partly combinatorial) proof.

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