

Springer Theory methods in representation theory
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Classical Springer Theory is a geometric construction of Weyl group algebras and affine Hecke algebras together with their simple representations. A similar construction leads to KLR-algebras whose graded projective modules categorify the upper half of the quantum group (of a given quiver), by work of Khovanov, Lauda and others. We explain these constructions more generally. As a further application we give a geometric construction of the Hall module