Representations of shifted affine quantum groups and Coulomb branches

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I will present an equivalence between the category O for shifted quantum loop groups (associated with arbitrary Cartan matrices, including non-symmetric ones) and a module category over a new type of quiver Hecke algebra.

This equivalence is based on the computation of the K-theoretic analogue of Coulomb branches with symmetrizers introduced by Nakajima and Weekes.

At the decategorified level, this yields a connection between the Grothendieck group of O and a finite-dimensional module over a simple Lie algebra of unfolded symmetric type. In some cases, this module can be computed explicitly; more generally, one can describe its crystal structure via a combinatorial rule. Joint with Eric Vasserot.