1165-20-135   **Daniel Orr*** (`dorr@vt.edu`). *Equivariant K-theory of the semi-infinite flag manifold as a nil-DAHA module.*

The equivariant K-theory of the semi-infinite flag manifold, as developed recently by Kato, Naito, and Sagaki, carries commuting actions of the nil-double affine Hecke algebra (nil-DAHA) and a q-Heisenberg algebra. Since the action of the latter is free of rank $|W|$, where W is the (finite) Weyl group, one may express the nil-DAHA action using $W \times W$ matrices over the q-Heisenberg algebra. We give an explicit algebraic construction of the resulting matrices, in simply-laced type, by means of a limit from the full DAHA. This construction reveals that operators of equivariant scalar multiplication, when expressed in terms of the Heisenberg algebra, give a geometric realization of the nonsymmetric q-Toda system introduced previously by Cherednik and the author. (Received January 15, 2021)