ABSTRACT

For a Dynkin graph $\Gamma = (I, E)$ of $\mathsf{A}, \mathsf{D}, \mathsf{E}$ type and a pair of dimension vectors $\mathbf{v}, \mathbf{w} \in \mathbb{N}^I$, Nakajima has constructed a smooth, quasi–projective, symplectic variety $\mathcal{M}(\mathbf{v}, \mathbf{w})$ which comes equipped with an action of $GL(\mathbf{w}) \times \mathbb{C}^{\times}$ (called *Nakajima quiver variety*). The equivariant K–theory of the Nakajima quiver variety $\mathcal{M}(\mathbf{w}) = \sqcup_{\mathbf{v}} \mathcal{M}(\mathbf{v}, \mathbf{w})$ admits an action of an infinite–dimensional quantum group, namely *the quantum loop algebra* $U_q(L\mathfrak{g})$ of simple Lie algebra $\mathfrak{g}$ associated with Γ. Similarly the equivariant cohomology of $\mathcal{M}(\mathbf{w})$ admits an action of *the Yangian* $Y_{\hbar}(\mathfrak{g})$ of $\mathfrak{g}$. These symmetries of the quiver varieties were constructed by Nakajima and Varagnolo respectively.

Motivated by the geometric representation theory of Nakajima quiver varieties, we have constructed several *homomorphisms of geometric type* $U_q(L\mathfrak{g}) \to Y_{\hbar}(\mathfrak{g})$. In this talk, I will discuss the compatibility between the homomorphisms of geometric type and (certain variants of) the equivariant Chern character relating equivariant K–theory and cohomology of Nakajima quiver varieties. This talk is based on a joint work with V. Toledano Laredo.