THE FIELDS INSTITUTE
FOR RESEARCH IN MATHEMATICAL SCIENCES

RALF SCHIFFLER
Universite du Quebec a Montreal

On the multiplication in the quantized enveloping algebra of type A (25-30)

Let $\mathbf{U}^+$ be the + part of the quantized enveloping algebra of Drinfeld-Jimbo of type A_n and let $\mathcal{Q}$ be a quiver of the same type. Denote by $\{E_{\mathbf{i}}^{\mathbf{c}} \mid \mathbf{c} \in \mathbf{N}^\nu\}$ a PBW type basis of $\mathbf{U}^+$ associated to the quiver and by $\{\mathcal{E}^{\mathbf{c}} \mid \mathbf{c} \in \mathbf{N}^\nu\}$ Lusztigs canonical basis. The entries of the transition matrix between these bases determine the local intersection cohomology of the corresponding quiver varieties. The elements $E_{\mathbf{i}}^{\mathbf{c}}$, such that one coordinate of $\mathbf{c}$ is 1 and its other coordinates are 0, are called root vectors. Using the Auslander-Reiten quiver and the Hall algebra approach, we will show how to express the product of such a root vector and an arbitrary element of the PBW type basis in terms of the that basis. If there is enough time, we will explain how to use this result to determine which quiver varieties of type A_n are smooth.