AN ALGEBRA ON PROJECTIVE GEOMETRY AND THE QUANTUM AFFINE ALGEBRA $U_q(\widehat{\mathfrak{sl}}_2)$

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Let P be the set of all subspaces of a finite-dimensional vector space over a finite field. We introduce a certain two-parameter partition $P_{i,j}$ of P with respect to a fixed subspace. In this talk, we consider the complex matrix algebra $\mathcal{T}$ with rows/columns indexed by P generated by the certain diagonal matrices K_1, K_2, the raising matrices R_1, R_2 and the lowering matrices L_1, L_2 with respect to the partition $P_{i,j}$. Then we will show that $\mathcal{T}$ is a homomorphic image of the quantum affine algebra $U_q(\widehat{\mathfrak{sl}}_2)$ and we will describe the irreducible modules for $\mathcal{T}$ as modules for $U_q(\widehat{\mathfrak{sl}}_2)$.

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