



The Hong Kong University of Science and Technology

Department of Mathematics

Lie Theory Seminar

**Standard monomial theory for model
algebras of the general linear group**

By

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Abstract

For positive integers p, q and n such that $p + q \leq n$, we use classical invariant theory to construct a complex algebra $\mathcal{R} = \mathcal{R}_{n,p,q}$ with the property that it is a multiplicity free sum of irreducible rational representations of the complex general linear group $\mathrm{GL}_n(\mathbb{C})$. We identify a finite set $\mathcal{G}_{\mathcal{R}}$ of algebra generators of \mathcal{R} and show that \mathcal{R} has a standard monomial theory with respect to $\mathcal{G}_{\mathcal{R}}$ i.e. a set of specially defined monomials on the elements of $\mathcal{G}_{\mathcal{R}}$ forms a basis for \mathcal{R} . As a consequence of this construction, we obtain an explicit basis for each of the irreducible rational representations of $\mathrm{GL}_n(\mathbb{C})$ indexed by a set of ordered pairs of semistandard tableaux. Part of our proof uses properties of an extension of the Hodge dual operator.

Dates : 23 May 2017

Time: 11:00 a.m. – 12:00 noon

***Venue: Room 3472, Academic Building
(near Lifts 25& 26), HKUST***

All are welcome!