

Queen's Algebraic Geometry — Seminar —

INVARIANTS FOR THE MODULAR CYCLIC GROUP OF PRIME ORDER VIA CLASSICAL INVARIANT THEORY

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Abstract

Let \mathbb{k} be any field of characteristic p . It is well-known that there are exactly p inequivalent indecomposable representations V_1, V_2, \dots, V_p of C_p defined over \mathbb{k} . Thus if V is any finite dimensional C_p -representation, then there are nonnegative integers $0 \leq n_1, n_2, \dots, n_k \leq p-1$ such that $V \cong \bigoplus_{i=1}^k V_{n_i+1}$. It is also well-known there is a unique (up to equivalence) $(d+1)$ -dimensional irreducible complex representation of $\mathrm{SL}_2(\mathbb{C})$ given by its action on the space R_d of d forms. I'll describe my recent result which reduces the computation of the ring of C_p -invariants $\mathbb{k}[\bigoplus_{i=1}^k V_{n_i+1}]^{C_p}$ to the computation of the classical ring of invariants (or covariants) $\mathbb{C}[R_1 \oplus (\bigoplus_{i=1}^k R_{n_i})]^{\mathrm{SL}_2(\mathbb{C})}$. This allows us to compute for the first time the ring of invariants for many representations of C_p .

Monday, October 5, 2009
3:00pm – 4:00pm
319 Jeffery Hall