Conjugate weight enumerators and invariant theory

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In 1970 Andrew Gleason discovered a beautiful connection between coding theory and invariant theory of finite groups that has been generalised by Nebe, Rains and Sloane (NRS2006):Associated to a Type of self-dual codes there is a series of finite complex matrix groups $C_m \leq GL_{v^m}(\mathbb{C})$ such that the invariant ring of C_m is spanned by the genus-m complete weightenumerators of these self-dual codes.Motivated by applications to measurement schemes for low rank matrix recoveryBannai, Oura and Da Zhao showed that the ring of complex projective invariants of thecomplex Clifford group is generated by the complex conjugate weight enumerators ofself-dual doubly even codes.In joint work with my supervisor Nebe we put the latter approach in the abstract framework ofNRS2006. Starting out from the case of the complex Clifford group I will illustrate these results and give further examples.