

SEMINARIO

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Symmetries of orbifold invariants for Berglund-Hübsch-Henningson-Takahashi dual pairs and their refinements

Abstract: P. Berglund, T. Hübsch and M. Henningson found a method to construct mirror symmetric Calabi-Yau manifolds using so-called invertible polynomials. They considered pairs (f, G) consisting of an invertible polynomial f and a (finite abelian) group G of diagonal symmetries of f . To a pair (f, G) one associates the Berglund-Hübsch-Henningson (BHH) dual pair $(f^\vee, G^\vee)$. There were found some symmetries between ("orbifold") invariants of dual invertible polynomials and dual pairs (more general than those related directly with the mirror symmetry). A. Takahashi suggested a conjectural method to find symmetric pairs consisting of invertible polynomials and (non-abelian, in general) symmetry groups being semidirect products of groups of diagonal symmetries and subgroups S of the group of permutations of the variables. It turned out that the corresponding symmetries may hold only under a special condition on the action of the subgroup of the permutation group called PC ("parity condition"). The symmetries were proved only in some cases. All the invariants under consideration can be, in a natural way, represented as sums (products) of summands (factors) corresponding to the conjugacy classes of the elements of S (the subgroup of the permutation group). It was observed that, in all the cases when symmetries were proved, they also took place for the summands (factors). This gives families of conjectual symmetries.

The talk is based on joint works with W.Ebeling.

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