

Abstract

In this talk, we introduce the notion of a regular action in the category of conformal modules over Lie conformal algebras with Virasoro elements. We show that a finite conformal module over the general conformal algebra of rank 1 (resp., rank N with $N > 1$) is semisimple if and only if there exists a pair of different Virasoro elements (resp., canonical Virasoro elements) with regular actions. Along the way to finding a semisimplicity criteria, we also discuss the classification of Virasoro elements of the general conformal algebra, leading us to construct a huge number of new Virasoro conformal modules. This is a joint work with Chunguang Xia.