Abstract

I will discuss a proof of a conjecture of almost twenty years on the modular invariance of (logarithmic) intertwining operators. Let V be a C 2-cofinite vertex operator algebra without nonzero elements of negative weights. The conjecture states that the vector space spanned by pseudo-q-traces shifted by -c/24 of (logarithmic) intertwining operators products of among grading-restricted generalized V-modules is a module for the modular group SL(2, Z). In 2015, Fiordalisi proved that such pseudo-q-traces are absolutely convergent and have the genus-one associativity property and some other properties. Recently, I have proved this conjecture completely. This modular invariace result gives a construction of C 2-cofinite genus-one logarithmic conformal field theories. We expect that it will play an important role in the study of problems and conjectures on C 2-cofinite logarithmic conformal field theories. The talk will start with the meaning of modular transformations and the definition of vertex operator algebras.