

1131-17-234

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Twisted modules over vertex algebras formalize the relations among twisted vertex operators and have applications to conformal field theory and representation theory. A recent generalization, called twisted logarithmic module, involves the logarithm of the formal variable and is related to logarithmic conformal field theory. We investigate twisted logarithmic modules of lattice vertex algebras, reducing their classification to the classification of modules over a certain group. This group is a semidirect product of a Heisenberg group and a central extension of the additive group of the lattice. (Received July 16, 2017)