1009-17-169   **Katrina D. Barron*** (`kbarron@nd.edu`), Department of Mathematics, 255 Hurley Hall, University of Notre Dame, Notre Dame, IN 46556, and **Yi-Zhi Huang** and **James Lepowsky**. *An equivalence of two constructions of permutation-twisted modules for lattice vertex operator algebras.*

An isomorphism is given between two different constructions of permutation-twisted modules for the multi-fold tensor product of a lattice vertex operator algebra with itself. For K a positive-definite even lattice, k a positive integer, and L the orthogonal direct sum of k copies of K, consider the lattice automorphism of L given by permuting the direct sum factors K by a k-cycle permutation ν. In this setting, there are two constructions of ν-twisted V_L-modules: the construction for lattice vertex operator algebras and a lattice automorphism developed by the third author; and the construction for tensor product vertex operator algebras and a permutation automorphism developed by the first author jointly with Dong and Mason. These two constructions are very different – the first being based on the lattice, and the second based on a coordinate transformation of the underlying conformal geometry modeled on propagating strings – and yet, by a theorem of the first author jointly with Dong, and Mason, they must produce isomorphic ν-twisted V_L-modules. We construct an isomorphism explicitly thereby giving a direct link between the geometry arising from the lattice and the conformal geometry of propagating strings. (Received August 15, 2005)