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Nils Scheithauer* (scheithauer@mathematik.tu-darmstadt.de), TU Darmstadt, Fachbereich Mathematik, Schlossgartenstrasse 7, 64289 Darmstadt, Germany. *Construction and classification of holomorphic vertex operator algebras.*

We develop an orbifold theory for finite cyclic groups acting on holomorphic vertex operator algebras. Then we show that Schellekens' classification of holomorphic conformal field theories is a theorem on vertex algebras. Finally we use our results to construct some new holomorphic vertex operator algebras as lattice orbifolds. In the proofs of these results we assume the rationality of the fixed point subalgebra of a finite order automorphism. (Received February 03, 2016)