## Contents

Chapter	1.	Introduction	1
Chapter 2.1. 2.2. 2.3.	2. Von Unb Ton	Preliminaries on von Neumann algebras n Neumann algebras bounded operators affiliated with von Neumann algebras nita-Takesaki modular theory	7 7 9 10
Chapter 3.1. 3.2.	$\begin{array}{c} 3.\\ \text{Diff}\\ \text{Pos}\\ \widehat{\text{Diff}}\\ \text{Möl} \end{array}$	Preliminaries on conformal nets $(S^1)$ and its subgroup Möb itive-energy projective unitary representations of Diff <sup>+</sup> (S <sup>1</sup> ) and of $(S^1)$ and positive-energy representations of $\mathfrak{Vir}$ by a convisiont note and conformal note on $S^1$	13 13 15
3.3. 3.4.	Cov	variant subnets	$\frac{18}{21}$
Chapter 4.1. 4.2. 4.3.	4. Ver Cor Ver	Preliminaries on vertex algebras tex algebras iformal vertex algebras tex operator algebras and invariant bilinear forms	23 23 25 27
Chapter 5.1. 5.2. 5.3. 5.4.	5. Def An Uni of t Uni	Unitary vertex operator algebras inition of unitarity equivalent approach to unitarity itary automorphisms and essential uniqueness he unitary structure itary subalgebras	31 31 33 37 39
Chapter	6.	Energy bounds and strongly local vertex operator algebras	45
Chapter	7.	Covariant subnets and unitary subalgebras	53
Chapter	8.	Criteria for strong locality and examples	59
Chapter	9.	Back to vertex operators	67
Append	ix A	. Vertex algebra locality and Wightman locality	73
Append Ackn	ix B owle	3. On the Bisognano-Wichmann property for representations of the Möbius group edgments	75 79
Bibliogr	aph	У	81