Baumgärtel, Hellmut; **Wollenberg, Manfred**
Causal nets of operator algebras. Mathematical aspects of algebraic quantum field theory.
(English) Zbl 0749.46038
Mathematische Lehrbücher und Monographien. II. Abteilung: Mathematische Monographien. 80. Berlin: Akademie Verlag. xviii, 460 p. (1992).

This book meets the request of people working in Mathematical Physics, at least those who are concerned with functional-analytic methods.

Part I (Fundamentals of operator algebras, C^*-algebras, von Neumann algebras, decomposition theory) provides basic material that is presumably widely known; thus it is more or less to be regarded as an introduction.

Part II as well as Part IV are related to Quantum field theory and Algebraic statistical mechanics (nets of C^*-algebras and von Neumann algebras, quasi-local algebras, net automorphisms, causality, cluster properties, CAR and CCR algebras).

Part V deals with modular theory and (local) type III, or III-1, algebras, and nuclearity.

Part III yields a very elaborate presentation of superselection theory (representations, intertwiners, endomorphisms), Hilbert C^*-systems, inverse superselection theory, Mackey theory.

All in all, this is a very comprehensive book.

Reviewer: A.Wehrl (Wien)

MSC:

46L60	Applications of selfadjoint operator algebras to physics
46Lxx	Selfadjoint operator algebras (C^*-algebras, von Neumann (W^*-) algebras, etc.)
46N50	Applications of functional analysis in quantum physics
46-02	Research exposition (monographs, survey articles) pertaining to functional analysis
81T05	Axiomatic quantum field theory; operator algebras
82B10	Quantum equilibrium statistical mechanics (general)

Cited in **29** Documents

Keywords:

decomposition theory; Quantum field theory; Algebraic statistical mechanics; nets of C^*-algebras and von Neumann algebras; quasi-local algebras; net automorphisms; causality; cluster properties; CAR and CCR algebras; modular theory; nuclearity; superselection theory; representations; intertwiners; endomorphisms; Hilbert C^*-systems; inverse superselection theory