

INDICE

D. KASTLER – Introduction	pag.	ix
Gruppo fotografico dei partecipanti al Corso		fuori testo
R. V. KADISON – Normal states and unitary equivalence of von Neumann algebras.		
1. Introduction	pag.	1
2. Vector state decomposition of completely additive states.	»	1
3. When normal states are vector states. The unitary implementation theorem	»	6
4. A second approach to normal states	»	10
5. The type of the commutant	»	14
A. VAN DAELE – The Tomita-Takesaki theory for von Neumann algebras with a separating and cyclic vector.		
1. Introduction	»	19
2. The modular operator of a von Neumann algebra with a given separating and cyclic vector	»	20
3. Some operator equations	»	24
4. The main result	»	26
A. CONNES – The Tomita-Takesaki theory and classification of type-III factors.		
1. Comparison of the modular automorphisms groups.	»	29
2. The modular homomorphism, image and kernel	»	33
3. Invariant S , group property, computability and duality with T	»	37
4. Type-III λ factors $0 < \lambda < 1$	»	43

M. TAKESAKI – The structure of a von Neumann algebra of type III and crossed products.

Introduction	pag.	47
1. Crossed products	»	48
2. Duality	»	50
3. Dual weights	»	53
4. The fixed-point subalgebra of $\mathcal{R}(\mathcal{M}; \alpha)$ under the dual action $\hat{\alpha}$	»	56
5. The structure of a von Neumann algebra of type III	»	57
6. Algebraic invariants $S(\mathcal{M})$ and $T(\mathcal{M})$ of Connes	»	61

H. ARAKI – Positive cone, Radon-Nikodym theorems, relative Hamiltonian and the Gibbs condition in statistical mechanics. An application of the Tomita-Takesaki theory.

1. Modular operator and modular conjugation operator	»	64
1'1. Operators A_Ψ and J_Ψ	»	64
1'2. KMS condition	»	65
1'3. Characterization of A_Ψ	»	67
1'4. Characterization of J_Ψ	»	70
1'5. Example	»	70
2. The cone V_Ψ^*	»	72
3. Radon-Nikodym derivatives	»	75
3'1. Theorems	»	75
3'2. Technical lemmas	»	76
3'3. Characterization of Q_Φ	»	78
4. Radon-Nikodym theorems	»	79
4'1. Theorems	»	79
4'2. Technical lemmas	»	79
4'3. Proofs of theorems	»	81
5. The cone V_Ψ^0	»	82
5'1. Theorems	»	82
5'2. Existence proof	»	83
6. The cone V_Ψ^1	»	85
6'1. Basic properties	»	85
6'2. Decomposition theorems	»	86
6'3. Universality	»	87
6'4. Radon-Nikodym derivative satisfying the chain rule.	»	89
7. Canonical representation of $*$ -automorphisms of \mathfrak{M}	»	89
8. Relative Hamiltonians	»	91
8'1. The notion of a relative Hamiltonian	»	91
8'2. Basic properties	»	92
8'3. Existence	»	92
8'4. Some inequalities	»	92

9.	An application to equilibrium conditions	pag.	93
9'1.	The lattice system	»	93
9'2.	The Gibbs condition	»	94
9'3.	Bounded intertwiner	»	95
9'4.	Equivalence with the variational principle	»	97
9'5.	A relation with the equilibrium condition of Lanford and Ruelle	»	99
 E. STØRMER – On the structure theory of factors.			
1.	Introduction	»	101
2.	Infinite-tensor products	»	101
3.	Asymptotically Abelian C^* -algebras.	»	107
 W. KRIEGER – On the construction of factors from ergodic nonsingular transformations.			
			» 114
 R. HERMAN – Faithful normal states on a von Neumann algebra. » 121			
 E. STØRMER – Spectral subspaces of automorphisms.			
1.	Introduction	»	128
2.	The discrete case	»	129
3.	The continuous case	»	130
 G. K. PEDERSEN – Derivations of operator algebras			
			» 139
 J. TOMIYAMA – Derived algebras of C^* -algebras			
			» 147
 C. LANCE – Tensor products of C^* -algebras.			
Introduction.			
1.	Morphisms	»	155
2.	Tensor products	»	158
3.	Injective operator algebras	»	164
 L. ACCARDI – On square roots of measures.			
Introduction.			
1.	Construction of the space $\mathcal{H}(\Omega, \mathcal{B})$	»	168
2.	Action of $\text{aut}(\Omega, \mathcal{B})$ on $\mathcal{H}(\Omega, \mathcal{B})$	»	175
3.	The isomorphism $\mathcal{H}, \sigma^A \mathcal{H} \approx \mathcal{M}_R(\Omega, \mathcal{B})$	»	178
4.	On the classification of functional measures.	»	182

F. GUERRA – On the connection between Euclidean-Markov field theory and stochastic quantization.

1. Introduction	pag. 190
2. Nelson axioms for Euclidean-Markov field theory	» 191
3. The free Euclidean-Markov field	» 193
4. Stochastic quantization	» 195
5. Connection between Euclidean-Markov field theory and stochastic quantization	» 199

J. E. ROBERTS – Statistics and the intertwiner calculus.

1. The origin of statistics	» 203
2. Intertwiners and permutation symmetry	» 205
3. Classification of statistics	» 209
4. Morphisms with finite statistics and their left inverses	» 211
5. Charge conjugation	» 216

N. M. HUGENHOLTZ – Equilibrium states in quantum statistical mechanics.

1. The physical problems	» 226
2. Quantum lattice systems	» 227
3. Equilibrium of a finite system	» 229
4. The thermodynamical limit	» 230
5. Faithful states on the algebra of $n \times n$ matrices	» 232

D. W. ROBINSON – C^* -algebras and quantum statistical mechanics.

1. Introduction	» 235
2. Equilibrium states	» 237
3. Return to equilibrium I	» 240
4. Return to equilibrium II	» 244
5. Conclusion	» 248

J. YNGVASON – On the algebra of test functions for Wightman fields.

1. The algebra and the reconstruction theorem	» 253
2. Basic facts about S	» 255
3. Continuity properties of positive functionals.	» 257
4. A characterization of $(S^{+'} - S^{+''})$	» 258
5. The structure of the positive cone S^+	» 260
6. Extension of positive linear functionals.	» 261
7. Positive functionals vanishing on the spectrum ideal	» 261