the important physics in the foreground, while using high-powered mathematical concepts from category theory. The chapter ends with a brief mention of recent results on braid group statistics in low dimensions.

Chapter V is devoted to a description of thermal states and modular automorphisms. As a characterization of equilibrium states in the statistical mechanics of infinite systems, Haag, Nico Hugenholtz and Marinus Winnink have adopted the KMS condition (named for Ryogo Kubo, Paul Martin and Julian Schwinger), which extends the properties of analyticity (and periodicity) of thermal Green's functions in a strip of width $i\beta = i/kT$ in the complex time plane. Here again, developments in physics and in mathematics—the discovery of the "modular automorphisms" of von Neumann algebras by Minoru Tomita and Masamichi Takesaki—took place along remarkably parallel, independent paths. This theory has ultimately led to profound mathematical results by Alain Connes on the classification of factors and to Vaughan Jones's beautiful results in knot theory. Modular invariance has applications not only in statistical physics, but also in describing quantum fields localized in a wedge and in extensions to conformal field theory.

Chapter VI starts with a deep analysis of what it means to detect particles and describe collisions, and the trial and error involved in designing experimental detectors and good theories. Haag again provides deep insights for understanding real physics in these very abstract terms. The discussion moves on to asymptotic particle configurations and to Buchholz's recent analysis of the particle content of the quantum field algebraic theory. The chapter ends with a brief discussion of the concepts of particle and infraparticle, relating the C* algebra approach to actual interpretation of scattering experiments.

Chapter VII, Retrospective and Outlook, starts with a comparison of the relative merits of the algebraic approach and constructive field theory. After pointing out the virtues and beauty of the algebraic approach, Haag admits that so far "it has given a frame and a language not a theory... There are few quantitative consequencies which are independent of a specific model." He goes on to list the strengths and weaknesses of Feynman path integrals in the Euclidean domain. Again the reader will be impressed by Haag's uncanny ability to get to the essence of the problem. Haag ends by noting that, "It may be considered as the central challenge to the algebraic approach to incorporate the local gauge principle into its conceptual frame." He admits that the combination of differential geometric ideas with the net structure of local algebras (an old dream of this reviewer) is in its infancy. Haag hints at the relationship of nets of local algebras with general relativity (which is briefly touched in the last section of the chapter), and he concludes by mentioning the need for synthesizing the Lagrangian and algebraic approaches. After a brief mention of supersymmetry in section 3, Haag summarizes his work with Klaus Fredenhagen and Heide Narnhofer on quantum field theory in a curved background and derives Hawking radiation from the algebraic formulation.

It is comforting to read a book that touches the forefront of theoretical physics research and at the same time is certain not to be dated when the next fashion in theoretical physics makes its appearance. The framework discussed by Haag (and to which he devoted a half-century of work) is one against which most future developments in this field will have to be tested. This book is bound to occupy a place on a par with other classics in the mathematical physics literature.

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