mixture of standard theory and new research work which has not previously appeared in book form. It is a good textbook for mathematicians and physicists who want to learn the C^*-quantum physics. In the following, I will review the book chapter by chapter. It consists of two volumes. The first volume is devoted to mathematical theory of operator algebras and their dynamics, and the second to its applications to quantum statistical mechanics, and to the models of quantum statistical mechanics. The first volume contains four chapters and the second contains two chapters. The chapters of the second volume are numbered consecutively with those of the first. Chapter 1 is a brief historical introduction. The historical introduction is not concerned with the theory of operator algebras, but it is concerned with the interplay between operator algebras and quantum physics. Chapter 2 is C^*-algebras and von Neumann algebras. It discusses the elementary theory of operator algebras, Tomita-Takesaki theory and the standard form of von Neumann algebras, quasilocal algebras, and miscellaneous results and structure. The authors select material from the general theory of operator algebras which is needed for quantum physics. Chapter 3 is groups, semigroups, generators. In this chapter, the authors discuss mainly derivations, automorphism groups and generation problems. Chapter 4 is decomposition theory. Here various decompositions of states are treated. The authors use a modern method developed recently by many researchers, which combines the reduction theory of von Neumann with the Choquet theory. In the ergodic decomposition which is of importance in mathematical physics, the notion of G-abelianness introduced by Lanford and Ruelle is used.

The contents of the first volume is rich enough to use it as a textbook for advanced graduate students in the field of functional analysis. For physics students, there might be too much abstraction. Chapter 5 is states in quantum statistical mechanics. Here the authors describe continuous quantum systems, KMS states, and stability and equilibrium. The material prepared in Volume 1 is seriously used in the two sections of KMS states, and stability and equilibrium. Chapter 6 is models of quantum statistical mechanics. Here, the authors describe quantum spin systems and continuous quantum systems. This chapter is most instructive for C^*-algebraists, though there is little involvement of the theory of operator algebras. The reason is that it would be an interesting problem to extend various results in this chapter to more general C^*-dynamics.

SHÔICHIRÔ SAKAI

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Global Lorentzian geometry, by John K. Beem and Paul E. Ehrlich, Pure and Applied Mathematics, vol. 67, Dekker, New York, 1981, vi + 460 pp.,

The past two decades have witnessed an enormous growth in the development of global methods in Lorentzian geometry. The time seems ripe for a systematic treatment of global Lorentzian geometry written in the language of