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The resolvent CCR algebra and KMS states. (English) Zbl 1366.81219

Arai, Asao (ed.) et al., Mathematical quantum field theory and related topics. Proceedings of the conference, Kyushu University, IMI, Fukuoka, Japan, June 6–8, 2016. Fukuoka: Kyushu University, Institute of Mathematics for Industry and Graduate School of Mathematics. MI Lecture Note 72, 58-67 (2017).

From the introduction: In this paper, we define the Weyl CCR algebra and the resolvent CCR algebra and present some results in [*D. Buchholz* and *H. Grundling*, J. Funct. Anal. 254, No. 11, 2725–2779 (2008; Zbl 1148.46032)] in section 2. In section 3, we construct one-parameter groups of $*$-automorphisms on the resolvent CCR algebra. In section 4, we construct KMS states associated with one-parameter groups of $*$-automorphisms defined in the section 3 and present our main results [the author and *T. Matsui*, "KMS states of weakly coupled anharmonic crystals and the resolvent CCR algebra", Preprint, arXiv:1601.04809]. In ["The resolvent algebra for oscillating lattice systems: dynamics, ground and equilibrium states", Preprint, arXiv:1605.05259], *D. Buchholz* proved more general result. We explain some results of [Buchholz, loc. cit.] in section 5.

For the entire collection see [Zbl 1359.81005].

MSC:

81T05 Axiomatic quantum field theory; operator algebras
46L05 General theory of C^*-algebras
46L40 Automorphisms of selfadjoint operator algebras
46L53 Noncommutative probability and statistics
46L60 Applications of selfadjoint operator algebras to physics
81S05 Commutation relations and statistics as related to quantum mechanics (general)
82B10 Quantum equilibrium statistical mechanics (general)