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Arai, Asao

Perturbation of embedded eigenvalues: A general class of exactly soluble models in Fock spaces. (English) Zbl 0713.47010

Hokkaido Math. J. 19, No. 1, 1-34 (1990).

The author deals with perturbation problems of embedded eigenvalues for operators with infinite degrees of freedom acting in the tensor product of $L^2(\mathbb{R})$ and the Boson-Fock space over a Hilbert space. A general class of operators for which the problem is "exactly soluble" is constructed. If the Hilbert space is equal to $L^2(\mathbb{R}^n)$, the class contains the Hamiltonians of standard models of a one- dimensional quantum harmonic oscillator coupled quadratically to a quantum scalar field on the $n+1$-dimensional space-time.

Reviewer: S.D.Karakozov

MSC:

47A55 Perturbation theory of linear operators
47A70 (Generalized) eigenfunction expansions of linear operators; rigged Hilbert spaces
47L90 Applications of operator algebras to the sciences
81T15 Perturbative methods of renormalization applied to problems in quantum field theory
47N50 Applications of operator theory in the physical sciences

Cited in **10** Documents

Keywords:

Boson-Fock space over a Hilbert space; one-dimensional quantum harmonic oscillator coupled quadratically to a quantum scalar field

Full Text: DOI

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