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11. Mathematical Physics

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Normal forms of quadratic boson operators and theirs spectrum.

Applying Bogolubov's approach to the N particles Schrödinger equation for spinless bosons with binary interaction, we reduced it approximately, in the statistical limit to the cubic or quadratic boson's symmetric operators, depending on physical parameters. For that class of symmetric quadratic boson's operators which closures are selfadjoint operators in the Fock space we obtained classification of its normal forms under the proper linear canonical transformations; obtained classification of its spectrum; and obtained conditions when their spectrum is discrete, continuous, not negativ. Part of these results is joint work with professor V. P. Maslov. Reference: V. V. Kucherenko, V. P. Maslov "Normal forms of quadratic boson operators", Mathematical Notes, v.61(1997), p. 58-75