Multipartite State Representations in Multi-mode Fock Space and Their Squeezing Transformations

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Abstract: We present the continuous state vector of the total coordinate of multi-particle and the state vector of their total momentum, respectively, which possess completeness relation in multi-mode Fock space by virtue of the integration within an order product (IWOP) technique. We also calculate the transition from classical transformation of variables in the states to quantum unitary operator, deduce a new multi-mode squeezing operator, and discuss its squeezing effect. In progress, it indicates that the IWOP technique provides a convenient way to construct new representation in quantum mechanics.

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