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On Some Properties of Weyl Relation

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Abstract

We generalize the following Weyl relation for analytic functions $F(\hat{A},\hat{B})$ and $G(\hat{A},\hat{B})$ of the operators $\hat{A}$ and $\hat{B}$ where $[\hat{A},\hat{B}]=iC, \quad C\in\mathcal{R}$.

$$\exp\{it\hat{F}\}\exp\{-is\hat{G}\}\exp\{-it\hat{F}\}=\exp\{-isG(t)\}$$

$$G(t)=\exp\{it\hat{F}\}\hat{G}\exp\{-it\hat{F}\}$$

We study this general Weyl relation for the case where the function operators coincide with the Hamiltonian of a quantum system $F=\mathcal{H}(\hat{p},\hat{q})$.