非自己共役ハミルトニアンとその周辺

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The purpose of this talk is to introduce our studies and ideas about non-self-adjoint Hamiltonian and some physical operators constructed from biorthogonal sequences in a Hilbert space. The notion of generalized Riesz system which is a generalization of Riesz basis plays an important for rule such studies.

Definition *A sequence $\{\varphi_n\}$ in $\mathcal{H}$ is called a generalized Riesz system if there exist a densely defined closed operator T in $\mathcal{H}$ with densely defined inverse and an ONB $\{e_n\}$ such that $e_n \in D(T) \cap D((T^{-1})^*)$ and $\varphi_n = Te_n$, $n = 0, 1, \cdots$. We call $(\{e_n\}, T)$ a constructing pair for $\{\varphi_n\}$.*

From this reason, we investigate under what assumptions a biorthogonal sequence is a generalized Riesz system and construct well-defined some physical operators. Furthermore, we introduce the results of recent works around this topic.[1]-[11]

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