

Determinants of Trace Class Operators - Lidskii's Theorem

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11.07.2023

0.1 Lidskii's Theorem

Theorem 1. *Let X be a Hilbert space and $A \in L(X)$ be a trace-class operator with eigenvalues $\{\lambda_1, \lambda_2, \dots\}$. Then*

$$\operatorname{Tr} A = \sum_{n=1}^{\infty} \lambda_n. \quad (1)$$

0.2 Tools: Generalized Eigenspaces and a Singular Value Inequality

0.3 (Antisymmetric) Tensor Products in Hilbert Spaces

0.4 Operator Determinants

0.5 Properties of the Determinant