

Characterization of Norm-Attainable Operators On Non-Separable Hilbert Spaces

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ABSTRACTS.

A number of mathematicians have studied Hilbert space over decades and various results have been obtained. There are several classes of Hilbert space operators and they include normal, positive, paranormal, hyponormal and norm-attainable operators. On norm-attainability operators, characterization has been done especially on separable complex Hilbert spaces but not on non-separable infinite dimensional complex Hilbert spaces operators. In this paper norm-attainability in an infinite dimensional complex non separable Hilbert space is presented. Results showed that an operator is norm attainable if it is unitary, norm-attainable if it is isometry, normaloid and even paranormal. The study also showed that inner derivation and generalized derivation are norm-attainable if the inner derivation and generalized derivation are normally represented respectively. Methodology involves use of inner products and mathematical inequality; Cauchy-Schwartz inequality and triangle inequality. Results obtained are useful in applications in operator theory particularly operator algebras.

Keywords: *Non separable, Normaloid, Paranormal, Norm-attainable.*

Sub-THEME: Engineering Science and Technology for Development

