$-(\alpha,\beta)-$ class (Q) Operators in Semi-Hilbertian space

Wanjala Victor, Beatrice Obiero Adhiambo, Edward Njuguna and John Wanyonyi Matuya

1. **Department of mathematics and physical sciences, Maasai Mara University,**
P.O Box 861-20500, Narok, Kenya.
Tel: 020 131 400
Email: wanjalavictor421@gmail.com

2. **Department of mathematics and computing, Rongo University**
P.O. Box 103-40404, Rongo, Kenya

Abstract

In this paper, we generalize the class of (α,β)-class (Q) operators to the class of $n,m(\alpha,\beta)$-class (Q) Operators in Semi-Hilbertian space , we study properties of this class and relation with other classes of operators. An operator $\triangle \in B_A(H)$ is said to be n,m-(α,β)A- class (Q) Operator if $\alpha^2(\triangle^{\#A})^{2n}\triangle^{2m} \leq_A ((\triangle^{\#A})^n(\triangle)^m)^2 \leq_A \beta^2(\triangle^{\#A})^{2n}\triangle^{2m}$ where $0 \leq \alpha \leq \beta \leq 1$ and n,m comes from the set of reals . The methodology used involved the use of properties of unitary and adjoint operators. Results showed that this class enjoys commutativity of operators. The class of n,m-(α,β)-A- class (Q) Operator provides an important tool in the development of quantum technologies . Quantum technology provides the potential of revolutionizing sensing, computing, communication and imaging. We recommend more study to be done on this class to establish its relation with various deformed operators on the semi Hilbertian space

Keywords: class (Q) operator, (α,β)-class (Q) operator , Semi-Hilbert space.