

## ON $M$ -class- $c$ - $wA_k^*(a, b)$ OPERATORS

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**Abstract.** Let  $L$  be a bounded linear operator on a complex Hilbert space  $H$ . If

$$|L^{*k}|^{2ac} \leq M^c (|L^{*k}|^a |L^k|^{2b} |L^{*k}|^a)^{\frac{ac}{k(a+b)}}$$

and

$$M^c |L^k|^{2bc} \geq (|L^k|^b |L^{*k}|^{2a} |L^k|^b)^{\frac{bc}{k(a+b)}},$$

then  $L$  is called  $M$ -class- $c$ - $wA_k^*(a, b)$  for some positive integers  $c, k, M$  and  $a, b \in (0, 1]$ . This study aims to derive the structural relationship of the operators using some of the well-known inequalities. Then the study focuses on  $M$ -class- $c$ - $wA_k^*(a, b)$  operator's spectral and algebraic properties in  $L^2(\lambda)$  space. Furthermore, the Kronecker product results are also explored.

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