FURTHER INEQUALITIES FOR THE NUMERICAL RADIUS OF HILBERT SPACE OPERATORS

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Abstract. In this article, we present some new inequalities for numerical radius of Hilbert space operators via convex functions. Our results generalize and improve earlier results by El-Haddad and Kittaneh. Among several results, we show that if $A \in \mathcal{B}(\mathcal{H})$ and $r \geq 2$, then

$$w'(A) \leq \|A\|^r - \inf_{\|x\|=1} \|\|A| - w(A)\|_2 x\|^2$$

where $w(\cdot)$ and $\|\cdot\|$ denote the numerical radius and usual operator norm, respectively.


Keywords and phrases: Operator inequality, norm inequality, numerical radius, convex function, f-connection, weighted arithmetic-geometric mean inequality.

REFERENCES


