OPERATOR MONOTONE FUNCTIONS INDUCED FROM LÖWNER–HEINZ INEQUALITY AND STRICTLY CHAOTIC ORDER

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Abstract. Furuta presented direct and simplified proofs of operator monotonicity of functions $\varphi(t) = \frac{t - 1}{\log t}$ and $\psi(t) = \frac{t \log t - t + 1}{(\log t)^2}$ by using Löwner-Heinz inequality. Extending his method, we give a sequence of operator monotone functions $\{f_k(t)\}_{k=0}^{\infty}$ with $f_0(t) = \varphi(t)$ and $f_1(t) = \psi(t)$. We also study relations between $f_k(t)$ and strictly chaotic order defined among positive invertible operators and obtain some extensions of results due to Furuta.


Keywords and phrases: positive operators, chaotic order, Löwner-Heinz inequality, operator monotone functions.

REFERENCES