FURTHER CHARACTERIZATIONS OF
CHAOTIC ORDER VIA SPECHT’S RATIO

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Abstract. As a characterization of chaotic order, we showed “If \( MI \geq B \geq mI > 0 \), then
\( \log A \geq \log B \) is equivalent to
\[
M_h(p)A^p \geq B^p
\]
for all \( p > 0 \), where \( h = \frac{M}{m} > 1 \) and \( M_h(p) = \frac{h^p}{e \log h^p - 1} \)” in [11].

In this paper, we shall show the following characterization of chaotic order as a parallel result to the result mentioned above:
“\( If MI \geq B \geq mI > 0 \), then \( \log A \geq \log B \) is equivalent to
\[
A^p + L(m, M) \log M_h(p)I \geq B^p
\]
for all \( p > 0 \), where \( L(m, M) = \frac{M - m}{\log M - \log m} \).” And we shall discuss the relations among this result and some related results.


Key words and phrases: Positive operator, Specht’s ratio, chaotic order.

REFERENCES