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Bounds for the spectral radius of positive operators

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Abstract: Let f be a non-zero positive vector of a Banach lattice L, and let T be a positive linear operator on L with the spectral radius $r(T)$. We find some groups of assumptions on L, T and f under which the inequalities

$$\sup\{c \geq 0 : Tf \geq cf\} \leq r(T) \leq \inf\{c \geq 0 : Tf \leq cf\}$$

hold. An application of our results gives simple upper and lower bounds for the spectral radius of a product of positive operators in terms of positive eigenvectors corresponding to the spectral radii of given operators. We thus extend the matrix result obtained by Johnson and Bru which was the motivation for this paper.

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