

Simultaneous versions of Perron-Frobenius and Wielandt results

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The classical theorem of Perron and Frobenius shows how much insight can be gained into the structure of an operator if it is assumed positive – or, the entries of its matrix in a suitable basis are all nonnegative. That of Wielandt gives a sufficient condition for “positivization” of certain operators on a complex linear space, i.e., a basis change to turn them to positive operators. These elegant results have attracted many authors and inspired extensions, to infinite dimensions on the one hand, and to simultaneous situations on the other:

- (a) What structural information can be obtained for semigroups of positive operators?
- (b) Under what conditions can we positivize a semigroup of operators simultaneously?

Some of the most recent simultaneous versions will be discussed.