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Eigenvalue Intervals for Nonlinear Operator Equations in Ordered Banach Spaces

We first extend results on existence of positive solutions for differential equations with separated boundary conditions. The results are further generalized to study eigenvalue problems for operator equations in the form of $x = \lambda T(x)$, where T is an nonlinear map defined on an ordered Banach space, and λ is a parameter. Some new abstract results are obtained and applied to concrete problems such as Hammerstein integral equations, discrete dynamical systems and boundary-value problems for semi-linear fractional differential equations. Part of the work was joint with Kaly Yanlei Zhang.