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Multiple positive solutions of higher order boundary value problems

We consider the existence of one or several nonzero positive solutions for a higher order nonlinear ordinary differential equation with n -sets of separated boundary conditions. The boundary value problems can be changed into a Hammerstein integral equation with a suitable kernel. We shall show that the kernel has upper and lower bounds. This enables us not only to exhibit a new property of positive solutions for the boundary value problems but also to derive new results on these boundary value problems from the well-known results on the existence of one or several positive solutions of Hammerstein integral equations with singularities obtained by the author recently. This avoids utilizing the theory of fixed point index for compact maps defined on cones directly.