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Nonlocal systems of BVPs with asymptotically superlinear boundary conditions

Abstract: In this paper we consider a coupled system of second-order boundary value problems with nonlocal, nonlinear boundary conditions, and we examine conditions under which such problems will have at least one positive solution. By imposing only an asymptotic growth condition on the nonlinear boundary functions, we are able to achieve generalizations over existing works and, in particular, we allow for the nonlocal terms to be able to be realized as Lebesgue-Stieltjes integrals possessing signed Borel measures. We conclude with a numerical example to illustrate the use of one of our two main results.

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