A Topological Approach to Nonlocal Differential Equations with Convolution Coefficients

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I will consider the nonlocal problem

$$-A\Big(\big(b * (g \circ u)\big)(1)\Big)u''(t) = \lambda f\big(t, u(t)\big),\ t \in (0,1),$$

where $*$ denotes a finite convolution and b and g are given functions. By means of a nonstandard cone, together with a specially tailored open set, I will demonstrate the existence of at least one positive solution to this class of problem under given boundary conditions. It will be shown that this approach improves results which rely on a more standard cone.