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Centro de Investigação em Matemática e Aplicações
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Coupled systems with Ambrosetti-Prodi-type differential equations

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Abstract:

In this paper, we consider some boundary value problems composed by coupled systems of second-order differential equations with full nonlinearities and general functional boundary conditions verifying some monotone assumptions. The arguments apply the lower and upper solutions method, and defining an adequate auxiliary, homotopic, and truncated problem, it is possible to apply topological degree theory as the existence tool. As far as we know, it is the first paper where Ambrosetti-Prodi differential equations are considered in couple systems with different parameters.

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