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Existence of positive solutions for fractional differential equations with $p$-Laplacian operator in infinite interval. (Chinese. English summary) Zbl 07448798

Summary: In this paper, by modifying a criterion about compactness, using Schaefer fixed point theorem and the special properties of $p$-Laplace operator $\phi_p(s)$, the differential system is transformed into its equivalent integral system. With the help of the method of judging relative compactness in infinite interval, the sufficient conditions for the existence of solutions of differential systems are obtained under weaker conditions, and the existence of unbounded solutions is also discussed, which generalizes and improves the related research results.

MSC:
34B18 Positive solutions to nonlinear boundary value problems for ordinary differential equations
34B40 Boundary value problems on infinite intervals for ordinary differential equations
34A08 Fractional ordinary differential equations

Keywords:
infinite interval; fractional differential equation; $p$-Laplace operator; positive solution