

Existence of optimal solutions to fractional nonlinear optimal control problem with Riemann-Liouville derivative

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In the paper, a nonlinear control system containing the Riemann-Liouville derivative of order $\alpha \in (0, 1)$ with a nonlinear integral performance index is studied. We discuss the existence of optimal solutions to such problem under a some convexity assumptions. Our study relies on the implicit function theorem for multivalued mappings.