

# Extremal parametric curve for concave-convex system via Nehari manifold

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In this study we show the existence and multiplicity result for a strongly coupled concave-convex system for an *optimal* choice of involved real parameters via Nehari manifold method. We have obtained the parametric region which is optimal in the sense that the constraint minimization idea based on Nehari manifold is no longer applicable if the parameters lie in the exterior of the extremal region. By applying a finer analysis of fibering maps, we have shown the existence of atleast two positive solutions for the parameters lying below and even above the parametric extremal curve, characterized variationally via nonlinear generalized Rayleigh Quotient. The main result of the work is complimented with the study of the problem for negative parameter values.