On The Extremal Parameters Curve of a Quasilinear Elliptic System of Differential Equations

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Abstract. In this work we consider the following system of quasilinear elliptic equations, with indefinite super-linear nonlinearity, depending on two real parameters λ, μ:

$$\begin{cases} -\Delta_p u = \lambda |u|^{p-2}u + \alpha f |u|^{\alpha-2}|v|^\beta u & \text{in } \Omega, \\ -\Delta_q v = \mu |v|^{q-2}v + \beta f |u|^\alpha |v|^{\beta-2} v & \text{in } \Omega, \\ (u,v) \in W_0^{1,p}(\Omega) \times W_0^{1,q}(\Omega). \end{cases}$$

By using the Nehari manifold and the notion of extremal parameter, we extend some results concerning existence of positive solutions.
Joint work with Kaye Silva

References

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[2] Yuri Bozhkov and Enzo Mitidieri, *Existence of multiple solutions for quasilinear systems via fibering method*, J. Differential Equations 190 (2003), no. 1, 239–267.