An application of the Lyapunov-Schmidt method to semilinear elliptic problems

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Abstract: In this paper we consider the existence of nonzero solutions for the undecoupling elliptic system -Δu = λu + δv + f(u,v), -Δv = θu + γv + g(u,v), on a bounded domain of \(\mathbb{R}^n\), with zero Dirichlet boundary conditions. We use the Lyapunov-Schmidt method and the fixed-point principle. © 2005 Texas State University - San Marcos.

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References:
• Bartolo, P., Benci, V., Fortunato, D., Abstract critical point theorems and applications to some nonlinear problems with strong resonance (1983) Nonlinear Analysis T.M.A., 7 (9), pp. 981-1012
• Cesari, L., Kannan, R., Qualitative study of a class of nonlinear boundary value problems at resonance (1985) J. Diff. Equations, 56, pp. 63-81
• Chiappinelli, R., Mawhin, J., Nugari, R., Bifurcation from infinity and multiple solutions for some Dirichlet problems with unbounded nonlinearities Nonlinear Analysis T.M.A., , in press
• De Figueiredo, D., Chiappinelli, R., Bifurcation from infinity and multiple solutions for an elliptic system (1993) Differential and Integral Equations, 6 (4), pp. 757-771
• Hoang, Q.T., On a system of semilinear elliptic equations on an unbounded domain Vietnam Journal of Mathematics, , to appear
• Hoang, Q.T., Ngô, Q.A., Existence of Positive Solution for a System of Semilinear Elliptic Differential Equations on an Unbounded Domain, , submitted to NoDEA
• Vargas, C., Zuluaga, M., On a nonlinear Dirichlet problem type at resonance and bifurcation (1992) PDEs, Pitmat Research, Notes in Mathematics, 273, pp. 248-252