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Title of the poster: Bifurcation problems associated to the singular Lane-Emden-Fowler equation with convection term

Text of the abstract. We expose some bifurcation results for the generalized Lane-Emden-Fowler equation $-\Delta u = g(u) + \lambda|\nabla u|^p + \mu f(x, u)$ in Ω , $u > 0$ in Ω , $u = 0$ on $\partial\Omega$, where Ω is a smooth bounded domain in \mathbb{R}^N , $\lambda \in \mathbb{R}$, $\mu \geq 0$, $0 < p \leq 2$, f is non-decreasing with respect to the second variable, and g is unbounded around the origin. The asymptotic behaviour of the solution around the bifurcation point is also established, provided $g(u)$ behaves like $u^{-\alpha}$ around the origin, for some $0 < \alpha < 1$. Our approach relies on finding explicit sub- and super-solutions combined with various techniques related to the maximum principle for elliptic equations. We distinguish two different cases, corresponding to a sublinear (resp. linear) growth of f at infinity. Our analysis emphasizes the combined effect of the nonlinearities f and g , as well as the key role played by the convection term $|\nabla u|^p$.

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