

1086-35-321

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39759. *Semipositone Problems on Exterior Domains.*

We study nonnegative radial solutions to the problem

$$\begin{cases} -\Delta u = \lambda K(|x|)f(u), & x \in \Omega \\ u = 0 & \text{if } |x| = r_0 \\ u \rightarrow 0 & \text{as } |x| \rightarrow \infty, \end{cases}$$

where λ is a positive parameter, $\Delta u = \operatorname{div}(\nabla u)$ is the Laplacian of u , $\Omega = \{x \in \mathbb{R}^n; n > 2, |x| > r_0\}$ and K belongs to a class of functions such that $\lim_{r \rightarrow \infty} K(r) = 0$. For classes of nonlinearities f that are negative at the origin we discuss existence and uniqueness results. (Received August 20, 2012)