

# Sequences of evanescent solutions of semipositone problems in exterior domains

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We investigate the existence and multiplicity of positive stationary solutions for a certain class of convection-diffusion equations in exterior domains. This problem leads to the following elliptic equation  $\Delta u(x) + f(x, u(x)) + g(x)x \cdot \nabla u(x) = 0$ , for  $x \in \Omega_R = \{x \in \mathbb{R}^n, \|x\| > R\}$ ,  $n > 2$ . Our goal is to show that the problem possesses nondecreasing sequences of solutions  $u$  satisfying the following condition: there exist  $0 < A < B$  and  $L > 0$  such that for all  $x \in \mathbb{R}^n$ ,  $\|x\| > L$ ,  $A \|x\|^{(2-n)} \leq u(x) \leq B \|x\|^{(2-n)}$ . The case when  $f(x, \cdot)$  may be negative at the origin, so-called semipositone problem, is also considered. Our results are based on a certain iteration schema in which we apply the subsolution and supersolution method developed by Noussair and Swanson.

## REFERENCES

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