Existence and approximation of radial solutions of semilinear elliptic equations in an annulus

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Keywords: Semilinear elliptic equations, radial solutions, existence, approximation
AMS Subject classification: 35B30, 35B40, 35J60

Abstract: This paper deals with the existence, behavior and approximation of positive and negative radially symmetric solutions of semilinear elliptic equations of the form $\Delta u + F(u, |x|; \lambda) = 0$ in an annulus $\Omega = \{x \in \mathbf{R}^n : A < |x| < B\}$. The general results are presented and subsequently certain examples are considered.