

On asymptotic behavior of singular solutions to Emden—Fowler type higher-order equations

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Abstract

For higher-order equations with power-law nonlinearity, the asymptotic behavior of blow-up solutions is studied. Typicality of the power-law behavior of such solutions to weakly nonlinear and atypicality of the power-law behavior for strongly nonlinear equations are proved. Algebraic and topological methods for studying the behavior of solutions are discussed. We also give an asymptotic classification of solutions to the third and fourth order equations in the cases of regular and singular nonlinearity.