Computational Techniques for Fourth Order Semilinear Elliptic Boundary Value Problems

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Abstract: In this paper we propose numerical techniques for solving some boundary value problems (BVPs) for a fourth order semilinear equation. They are based on the reduction of the fourth order problems to the solution of a sequence of BVPs for the Poisson equation. It is an extension of our method developed by ourselves recently for linear fourth order BVPs. The performed numerical experiments show the fast convergence of the proposed techniques in comparison with Wang's monotone iterative technique.

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