Numerical Solution of a Problem for Plates with a Partial Internal Support

D. Quang A[1] and T. H. Hai[2]

Abstract: In this paper we consider a problem for rectangular plates on a partial internal support with edges clamped or simply supported. The problem is reduced to a problem for biharmonic equation with strongly mixed boundary conditions, where a change of types of boundary conditions occurs in an interior point of a side of the rectangle. In its turn the latter problem is led to a sequence of problems for Poisson equation with strongly mixed boundary conditions. Finally, for solving these problems a version of the domain decomposition method is applied. The convergence of the obtained approximate solution is proved. Several numerical experiments show the fast convergence of the method. The effectiveness of the proposed method is clear from the comparison of it with the dual-series equations method used by other authors.

[1] Department of Mathematical Methods in Information Technology
Institute of Information Technology
Vietnam Academy of Science and Technology
18 Hoang Quoc Viet Road, 10307 Hanoi, Vietnam
dangqa@ioit.ac.vn

[2] Department of Basic Sciences
Thai Nguyen University of Information and Communication Technology
Thai Nguyen City, Vietnam
haininhtn@gmail.com