DOMAIN DECOMPOSITION METHOD FOR ELLIPTIC INTERFACE PROBLEMS

Dang Quang A, Truong Ha Hai, Vu Vinh Quang

TÓM TẮT:

Interface problems arise in setting of various physical and engineering problems, where the governing dierential equations have discontinuous across an interface. For solving them in recent years there are intensively developed immersed finite diference/finite element methods which draw attention to discretization of the equations nearly the interface for ensuring accuracy. Difrently from these methods in this paper we use a domain decomposition method based on updating of derivative of known function on interface to problem considered. It reduces the interface problem to a sequence of problems in subdomains that are easily solved by available softwares. The convergence of the iterative process is proved. Many numerical examples for rectangular and L-shape domains demonstrate the fast convergence of the method. The method can be applied especially effeciently for domains consisting of rectangles.