Sergey Korotov: *A posteriori error estimation for linear elliptic problems with mixed boundary conditions*; Helsinki University of Technology, Institute of Mathematics, Research Reports A495 (2006).

Abstract: *The paper is devoted to verification of accuracy of approximate solutions obtained in computer simulations. This problem is strongly related to a posteriori error estimates, giving computable bounds for computational errors and detecting zones in the solution domain, where such errors are too large and certain mesh refinements should be performed. Mathematical model consisting of a linear elliptic equation with mixed Dirichlet/Neumann/Robin boundary conditions is considered in this work. We derive in a simple way an easily computable upper bound for the error, which is understood as difference between the exact solution of the model and its approximation measured in the corresponding energy norm. The estimate obtained is completely independent of the numerical technique used to obtain approximate solutions and can be made as close to the true error as resources of a concrete computer used for relevant computations allow. Several issues of practical realization of the approach are discussed and a representative numerical test is presented.*

Correspondence

sergey.korotov@hut.fi