Development of High-Performance Meshless Method

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Fig. 2 The relative error ε as a functions of the number N of boundary nodes. Here, ▲ : Extended Boundary Node Method, ▼: Boundary Element Method.

Content:

The mesh-based methods (the FEM and the BEM *et al.*) have been developed as a numerical method for solving the boundary-value problem for PDEs. However, a target domain must be divided into a set of elements as the preprocessing of the mesh-based methods (See Fig. 1). In order to resolve the above demerit, many meshless methods have been so far proposed. Those methods are gotten attention as a next-generation numerical method.

In our previous works, the boundary-type meshless method has been extended for the purpose of improving accuracy and calculation speed. As a results, it is shown that the accuracy of the proposed method is extremely higher than the BEM (See Fig. 2). We are currently studying the research which is aimed to further improve the performance of the proposed method.

Appealing point:

For the future, we aim to apply the proposed meshless method to engineering problems.

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