

A NEW ERROR ESTIMATE AND ITS APPLICATION TO PLATE PROBLEMS IN THE EFG METHOD

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In recent years, as a posteriori error estimation method, projection method has been considered to be simple and effective technique in Element-free Galerkin (EFG) method and it has been verified in various in-plane problems. Since, in projection technique, the error is obtained by comparing the projected stresses and EFG stresses, the spurious oscillations from EFG stresses still remain in the distribution of estimated error. This can be eliminated through another projection of error. Based on this procedure, we develop Double Projection Technique that gives more realistic distribution of error.

We also expand the application field of error estimation technique into plate problems. Several researches on thin or thick plate and shell analysis in meshfree method have been reported by Krysl and Belytschko(1995 and 1996) and Kanok-Nukulchai et al (2001). To our knowledge, there have been virtually no attempt to apply error estimators into plate and shell problems in meshfree method. The ultimate goal of this study is to develop adaptive procedure for the problems of thick plate - usually denoted as Mindlin plate in meshfree method. We have also examined the effect of the size of influence domain used in double projection process. Several numerical examples were presented to demonstrate the performance of proposed technique.

References

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