

## The Improved Element Free Galerkin Method for 2D Heat Transfer Problems

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**Abstract :** The Improved Element Free Galerkin (IEFG) method is presented to treat the steady states and the transient heat transfer problems. As a result of a combination between the Improved Moving Least Square (IMLS) approximation and the Element Free Galerkin (EFG) method, the IEFG's shape functions don't have the Kronecker delta property and the penalty method is used to impose the Dirichlet boundary conditions. In this paper, two heat transfer problems, transient and steady states, are studied to improve the efficiency of this meshfree method for 2D heat transfer problems. The performance of the IEFG method is shown using the comparison between numerical and analytic results.

**Keywords :** meshfree methods, the Improved Moving Least Square approximation (IMLS), the Improved Element Free Galerkin method (IEFG), heat transfer problems

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