

The method of fundamental solutions for non-linear Berger equation of thin elastic plate

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Abstract

In this talk, we utilized the method of fundamental solutions, which is meshless and integral-free, to analyze the non-linear Berger equation for thin elastic plate. Based on the proposed numerical scheme, the deflection can be decomposed as the linear combination of the homogeneous and particular solutions. The particular solution based on the polyharmonic splines is derived and then the spatial-dependent loading term of the Berger equation can be approximated by polyharmonic splines. After the particular solution is obtained, the homogeneous solution, which is governed by homogeneous partial differential equations, can be solved by method of fundamental solutions. Several numerical examples are adopted to demonstrate the flexibility and robustness of the proposed meshless scheme, especially the irregular plate with spatial-dependent loading function. Furthermore, we also performed the convergence test for various order of polyharmonic splines.

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