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Introduction

Laminated composite plates are widely used in lightweight engineering structures. Accurate prediction of their static and dynamic responses is important for structural design. However, traditional direct collocation methods may suffer from low accuracy and numerical instability. The stabilized collocation method improves accuracy and stability by introducing Gaussian integration into the collocation formulation.

Methods

- Meshfree Method
- Stabilized Collocation Method
- Static and dynamic plate analysis

Graphics / Images

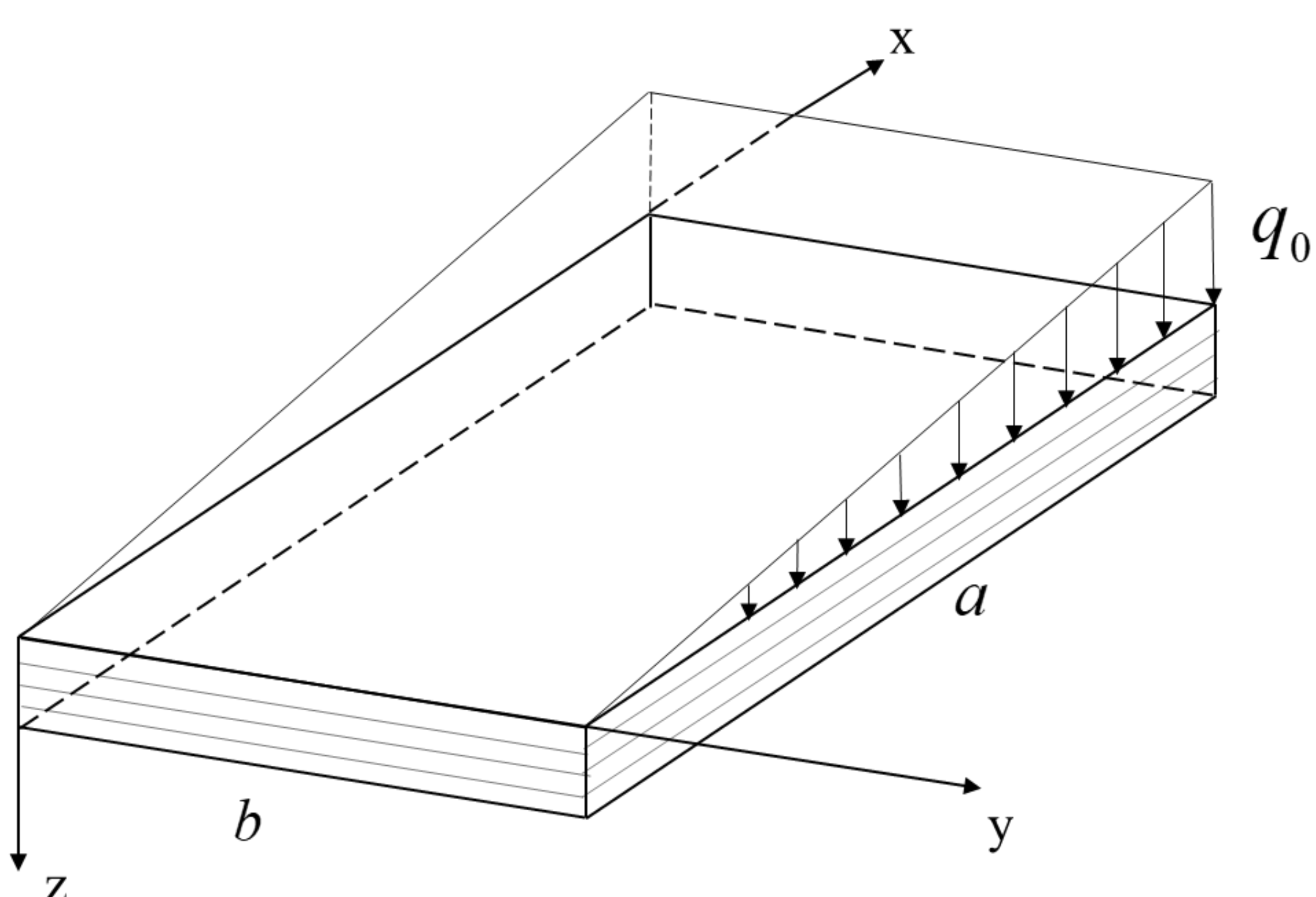


Fig. 1. Description of the plate under hydrostatic load

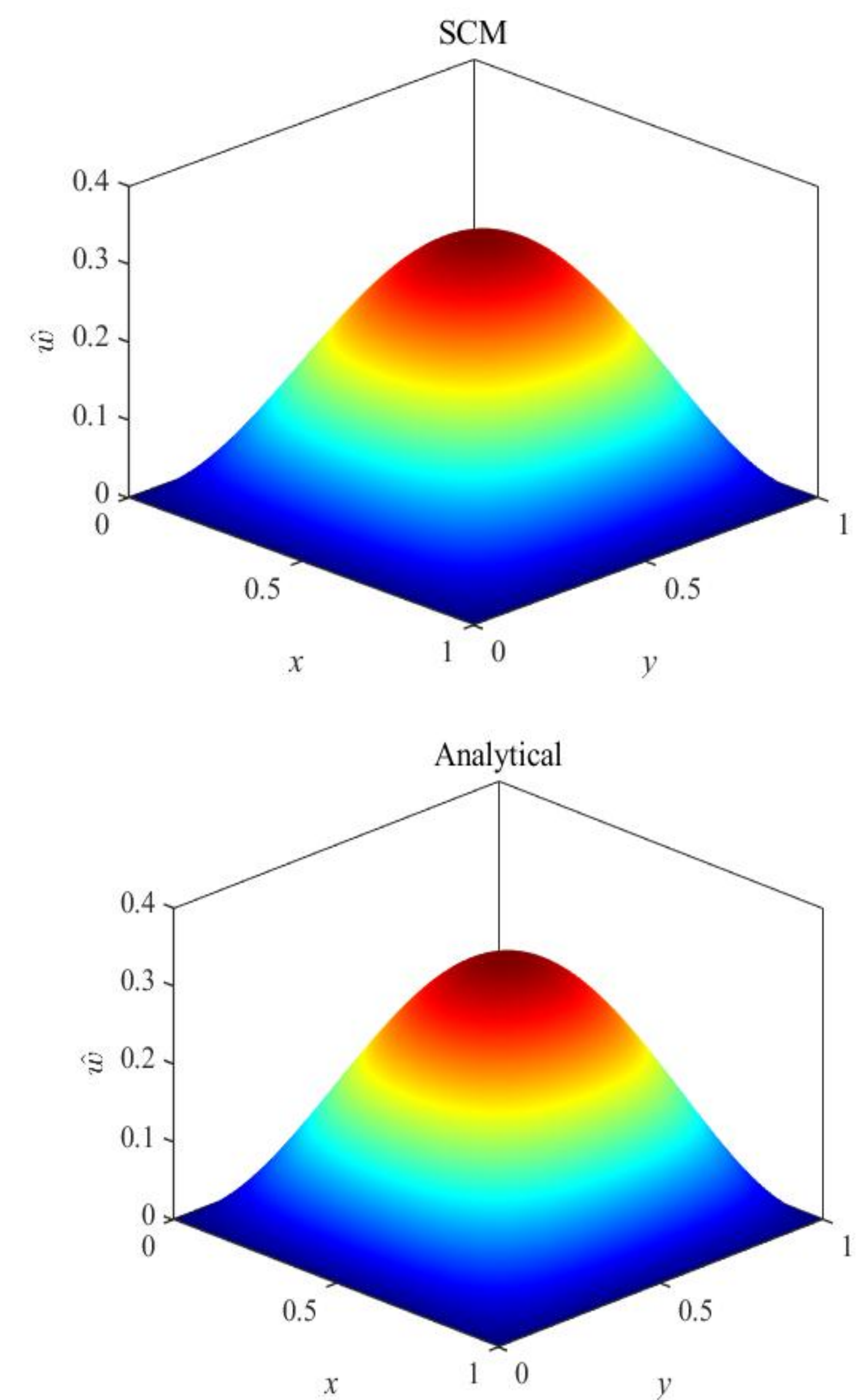


Fig. 2. Comparison of numerical and analytical solutions of specially orthotropic rectangular laminates under hydrostatic load

Conclusions

The meshless stabilized collocation method was applied to laminated composite plates under static and dynamic loading conditions. SCM provides accurate and stable deflection predictions and shows good agreement with available analytical solutions. It also allows concentrated loads to be treated more accurately at the actual loading point, reducing numerical errors caused by load distribution. These results demonstrate the potential of SCM for composite plate analysis and future impact related problems.