Application of computer algebra to dealing with finite element formulations

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Abstract

In this presentation, based on the authors' work, applications of computer algebra to dealing with finite element formulations in structural mechanics are summarized. The applications mainly include: explicit derivation of element stiffness matrix, parametric study of finite elements based on mixed field formulations, investigation of finite element relations and development of efficient finite elements from field consistence approach. Computer algebra provides a powerful tool in improving efficiency on the above aspects.