

Element-Independent Implementation for Method of Lagrange Multipliers

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Abstract : Treatment for the non-matching interface is an important computational issue. To handle this problem, the method of Lagrange multipliers including classical and localized versions are the most popular technique. It essentially imposes the interface compatibility conditions by introducing Lagrange multipliers. However, the numerical system becomes unstable and inefficient due to the Lagrange multipliers. The interface element-independent formulation that does not include the Lagrange multipliers can be obtained by modifying the independent variables mathematically. Through this modification, more efficient and stable system can be achieved while involving equivalent accuracy comparing with the conventional method. A numerical example is conducted to verify the validity of the presented method.

Keywords : element-independent formulation, interface coupling, methods of Lagrange multipliers, non-matching interface

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