

Meshfree Methods Based on Mixed Formulations with Independent Rotational Degrees of Freedom

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The paper is concerned with the application of meshfree methods such as the reproducing kernel particle method, or its equivalent the element free Galerkin, on the basis of mixed variational formulations. A specific feature of the theoretical framework is the inclusion of rotational parameters as independent degrees of freedom. Applications are sought in the areas of structural analysis such as plates and shells. In addition, the formulation can easily be extended to account for Cosserat-like theories of three dimensional bodies which are of interest in large strain inelastic deformations or in applications to MEMS. The paper also elaborates on the performance of meshfree methods based on mixed formulations with interpolations for the stress tensor as well.