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Generalized boundary element method for Galerkin boundary integrals. (English)

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Summary: A meshless approach to the Boundary Element Method in which only a scattered set of points is used to approximate the solution is presented. Moving Least Square approximations are used to build a Partition of Unity on the boundary and then used to construct, at low cost, trial and test functions for Galerkin approximations. A particular case in which the Partition of Unity is described by linear boundary element meshes, as in the Generalized Finite Element Method, is then presented. This approximation technique is then applied to Galerkin boundary element formulations. Finally, some numerical accuracy and convergence solutions for potential problems are presented for the singular, hypersingular and symmetric approaches.

MSC:

- 65N38 Boundary element methods for boundary value problems involving PDEs
- 80M15 Boundary element methods applied to problems in thermodynamics and heat transfer
- 80A20 Heat and mass transfer, heat flow (MSC2010)

Cited in 3 Documents

Keywords:

Galerkin method; BEM p-adaptivity; symmetrical BEM; hp-clouds; partition of unity

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