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Element-free Galerkin methods for static and dynamic fracture. (English) Zbl 0918.73268

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Summary: Element-free Galerkin (EFG) methods are presented and applied to static and dynamic fracture problems. EFG methods, which are based on moving least-square interpolants, require only nodal data; no element connectivity is needed. The description of the geometry and numerical model of the problem consists only of a set of nodes and a description of exterior boundaries and interior boundaries from any cracks. In moving least-square interpolants, the dependent variable at any point is obtained by minimizing a function in terms of the nodal values of the dependent variable in the domain of influence of the point. Numerical examples involving fatigue crack growth and dynamic crack propagation are presented to illustrate the performance of this method.

MSC:

[74S05](#) Finite element methods applied to problems in solid mechanics

[74R99](#) Fracture and damage

Cited in **119** Documents

Keywords:

[fatigue crack growth](#); [dynamic crack propagation](#); [moving least-square interpolants](#)

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