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Simulation of dynamic and static thermoelastic fracture problems by extended nodal gradient finite elements

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### Research Highlights

- An accurate and effective computational approach for dynamic and static thermoelastic fracture problems in solids is presented.
- Extended consecutive-interpolation 4-node finite elements without stress smoothing are taken.
- Static and dynamic stress intensity factors for thermal and thermal-mechanical loads are analyzed.
- Quasi-static crack propagation with complex geometry under thermal-mechanical load is studied.
- Obtained numerical results are compared with reference solutions showing high accuracy.

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