A numerical method for dynamic fracture using the extended finite element method with non-nodal enrichment parameters

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Highlights

- The extended finite element method (XFEM) is further developed to efficiently consider dynamic failure richment scheme.
- The enrichment parameters effectively represent physics of the discontinuity and are assigned to nonnodal points, i.e. crack surface.
- This feature successfully dissociates the finite element nodes from the extended finite element approximation and facilitates the treatment of arbitrary crack propagation in explicit methods.
- Dynamic simulation results in terms of crack path and speed were effectively computed and match the experimental results.