A new crack tip element for the phantom node method with arbitrary cohesive cracks

We have developed a new crack tip element for the phantom node method. In this method, a crack tip can be placed inside an element. Therefore cracks can propagate almost independent of the finite element mesh. We developed two different formulations for the three-node triangular element and four-node quadrilateral element, respectively. Although this method is well suited for the one-point quadrature scheme, it can be used with other general quadrature schemes. We provide some numerical examples for some static and dynamic problems.

Stichworte: Cracks, Hansbo and Hansbo’s approach, Phantom node method, dynamic fracture

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