

Accepted Manuscript

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Extended Isogeometric Analysis

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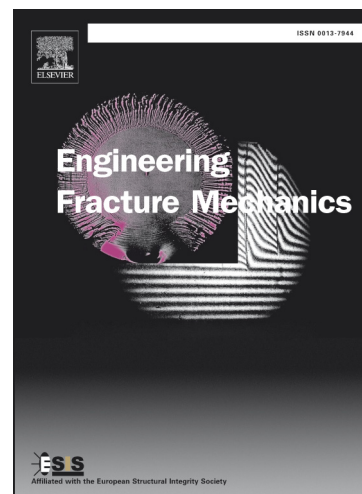
PII: S0013-7944(15)00476-2
DOI: <http://dx.doi.org/10.1016/j.engfracmech.2015.08.025>
Reference: EFM 4838

To appear in: *Engineering Fracture Mechanics*

Received Date: 11 January 2015
Revised Date: 11 August 2015
Accepted Date: 16 August 2015

Please cite this article as: Shojaee, S., Daneshmand, A., Crack Analysis in Media with Orthotropic Functionally Graded Materials Using Extended Isogeometric Analysis, *Engineering Fracture Mechanics* (2015), doi: <http://dx.doi.org/10.1016/j.engfracmech.2015.08.025>

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Crack-Analysis-in Media-with-Orthotropic-Functionally-Graded-Materials-Using--
Extended-Isogeometric-Analysis-

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Abstract

In the present study the extended Isogeometric analysis is applied with orthotropic approach for numerical modeling of stationary cracks in Functionally Graded Material plane bodies. Enrichment functions and level set method are integrated into Isogeometric analysis to develop the extended Isogeometric analysis formulation. The interaction integral method with three formulations related to auxiliary fields are used to obtain the stress intensity function. Smooth functions based on spatial coordinates are applied to take into account the variation of orthotropic materials of Functionally Graded Material plates in intended direction. The proposed method is compared with existing methods.

Keywords: Extended Isogeometric Analysis, Functionally Graded Material, fracture mechanics, level set method, enrichment functions

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