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Application of
Extended Finite
Element Method
(XFEM) to Simulate
Hydraulic Fracture
Propagation from
Oriented Perforations

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By Jay Sepehri, B.Sc. A
Thesis in Petroleum
Engineering Submitted
to the Graduate
Faculty of Texas Tech
University in Partial
fulfillment of the
requirements for the
Degree of MASTER OF
SCIENCE In
PETROLEUM
ENGINEERING

**Application of
Extended Finite
Element Method
(XFEM) to ...**

Page 5/27

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The extended finite element method (XFEM) is an extension of the conventional finite element method based on the concept of partition of unity. In this method, the presence of a crack is ensured by the special enriched functions in conjunction with additional degrees of freedom.

**Application of
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Page 6/27

Acces PDF Application Of Extended Finite Element Method (XFEM) to ...

In this paper, the extended finite element method (XFEM) and traditional finite element method (FEM) techniques are employed to study the behavior of a single crack initiation subjected to a ...

Extended Finite Element Method: Theory and Applications

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The application of extended finite element method (XFEM) formulation for nonlinear structural analyses is presented in this thesis. It aims to capture accurately the elastic response of a beam with an internal pin connection and the elasto-plastic response of a beam or a plate structure at a relatively low computational cost by utilizing the XFEM Timoshenko beam and

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**Application of
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element method for
plastic ...**

extended finite
element method •
cracks • multiple site
damage (MSD) • crack
propagation . Abstract .
This paper presents an
application of the
extended finite
element method
(XFEM) to the

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modelling of the propaga-tion of four cracks in a typical aircraft structural configura-tion. It is a thin plate with three holes subjected to uniform

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element method for
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Introduces the theory and applications of the extended finite element method

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Application Of

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Element Method

(XFEM) in the linear
and nonlinear
problems of continua,
structures and

geomechanics Explores
the concept of partition
of unity, various
enrichment functions,
and fundamentals of
XFEM formulation.

Covers numerous
applications of XFEM
including fracture
mechanics, large
deformation, plasticity,
multiphase flow ...

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Element Method:

Theory and

Applications ...

Application of the

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Element Method in

Crack Propagation: DI

Yuelan, WANG Haidou,

DONG Lihong, XING

Zhiguo, WANG Xiaoli

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Technology on

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of Armored Forces

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**Application of the
Extended Finite
Element Method in
Crack ...**

J.V. Cox, An extended finite element method with analytical enrichment for cohesive crack modelling, International Journal for Numerical Methods in Engineering, 78 (1), 48-83, 2009. 27. J.F. Unger, S. Eckardt, C.

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Konke, Modelling of

cohesive crack growth

in concrete structures

with the extended

finite element method,

Computer Methods in

Applied Mechanics and

Engineering, 196

(41-44), 4087-4100 ...

**Application of
Extended Finite
Element Method to
Cracked ...**

XFEM or eXtended

finite element method

is a very well-known

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technique and is getting more popular due to its vast application domain. It is a modification of finite element method (FEM) where problems having a local phenomenon such as kinks, stress concentration, and singularity in the solution are studied. XFEM has been most

IMPLEMENTATION OF EXTENDED FINITE

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Application Of Extended Finite **ELEMENT METHOD USING ...** Method

The extended finite element method (XFEM) is a numerical technique based on the generalized finite element method (GFEM) and the partition of unity method (PUM). It extends the classical finite element method by enriching the solution space for solutions to differential equations with

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discontinuous
functions.

Finite element method - Wikipedia

The XFEM makes research within a standard finite element framework and needs not mesh repartition to geometric and physical interface, and it reserves all merits of the CFEM, therefore it is the most effective numerical method to solve discontinuous

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dynamic problems so far. The crack growth problem was studied in the XFEM computation, and the displacement mode of elements with cracks and ...

Application of the Extended Finite Element Method to the ...

Finite Element Analysis allows you to solve any engineering problem that is “unsolvable” otherwise. It also

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greatly increases the accuracy of your solutions. However, it takes time to perform FEA correctly, so using it for problems that can be solved otherwise may not be the best approach.

What are the Applications of Finite Element Analysis ...

This paper demonstrates the application of the

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Application Of
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Element Method, or
XFEM, to the
assessment of the DHC
susceptibility of stress
concentrating features,
typical of those
considered in the
structural integrity
assessment of heavy
water pressure tube
reactors. The method
enables the calculation
of a DHC threshold
load.

Use of the Extended
Page 20/27

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**Finite Element
Method in the ...**

Eric B. Chin, N.
Sukumar, Modeling
curved interfaces
without
element-partitioning in
the extended finite
element method,
International Journal for
Numerical Methods in
Engineering,
10.1002/nme.6150,
120, 5, (607-649),
(2019).

The extended/gener
Page 21/27

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**alized finite element
method: An ...**

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Element Method:
Theory and
Applications - Ebook
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Element and Meshfree
Methods provides an
overview of, and
investigates, recent
developments in
extended finite
elements with a focus
on applications to
material failure in

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statics and dynamics.

This class of methods

is ideally suited for

applications, ...

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Chapter 3 Extended
Finite Element Method
for Isotropic Problems

3.1 INTRODUCTION 61

3.2 A REVIEW OF XFEM

DEVELOPMENT 61 3.3

BASICS OF FEM 65

3.3.1 Isoparametric

Acces PDF

Application Of

Extended Finite

finite elements, a short
review 65 3.3.2 Finite

element solutions for
fracture mechanics 67

3.4 PARTITION OF

UNITY 68 3.5

ENRICHMENT 69 3.5.1

Intrinsic enrichment 70

3.5.2 Extrinsic ...

EXTENDED FINITE ELEMENT METHOD

The extended finite
element method
(XFEM) has therefore
been developed to
improve the

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performance of the conventional finite element method in discontinuity problems.

Extended Finite Element Method:

Theory and

Applications introduces the theory and

applications of XFEM in the linear and

nonlinear problems of continua, structures, and geomechanics.

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