

REVIEW ON FEM, BEM, XFEM, SCALED BOUNDARY FINITE ELEMENTS AND FRACTAL FINITE ELEMENTS IN LINEAR FRACTURE MECHANICS

*AYT Leung¹, Hao Yang

¹ Building and Construction
City University, Hong Kong
Andrew.leung@cityu.edu.hk

Key Words: *Meshless, XFEM, scaled boundary finite elements, fractal finite elements.*

ABSTRACT

The paper is to report on the state-of-the-arts of the linear fracture mechanic problems analyzed by finite elements, boundary elements, meshless elements, extended finite elements, scaled boundary elements and fractal finite elements.

REFERENCES

- [1] J.P. Wolf, The scaled boundary finite element method, Wiley, 2003
- [2] G.C. Shi, S.T. Tu and Z.D. Wang, Multiscale damage related to environment assisted cracking, East China University of Science and Technology Press, 2005.
- [3] J. L. Asferg, P. N. Poulsen, L. O. Nielsen, A consistent partly cracked XFEM element for cohesive crack growth, International Journal for Numerical Methods in Engineering, Volume 72, Issue 4, Date: 22 October 2007, Pages: 464-485
- [4] Stefan Loehnert, Ted Belytschko, A multiscale projection method for macro/microcrack simulations, International Journal for Numerical Methods in Engineering, Volume 71, Issue 12, Date: 17 September 2007, Pages: 1466-1482
- [5] Daniel Rabinovich, Dan Givoli, Shmuel Vigdergauz, XFEM-based crack detection scheme using a genetic algorithm, International Journal for Numerical Methods in Engineering, Volume 71, Issue 9, Date: 27 August 2007, Pages: 1051-1080
- [6] D. K. L. Tsang, S. O. Oyadiji, A. Y. T. Leung, Applications of numerical eigenfunctions in the fractal-like finite element method, International Journal for Numerical Methods in Engineering, Volume 61, Issue 4, Date: 28 September 2004, Pages: 475-495
- [7] J. F. Xie, S. L. Fok, A. Y. T. Leung, A parametric study on the fractal finite element method for two-dimensional crack problems, International Journal for Numerical Methods in Engineering, Volume 58, Issue 4, Date: 28 September 2003, Pages: 631-642

- [8] M. Fleming, Y. A. Chu, B. Moran, T. Belytschko, Enriched element-free galerkin methods for crack tip fields, International Journal for Numerical Methods in Engineering, Volume 40, Issue 8, Date: 30 April 1997, Pages: 1483-1504
- [9] Nabil A. B. Yehia, Mark S. Shephard, On the effect of quarter-point element size on fracture criteria, International Journal for Numerical Methods in Engineering, Volume 21, Issue 10, Date: October 1985, Pages: 1911-1924