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Guangping Zou, He Chen

PII: S0167-8442(18)30184-8
DOI: https://doi.org/10.1016/j.tafmec.2018.05.014
Reference: TAFMEC 2053

To appear in: *Theoretical and Applied Fracture Mechanics*

Received Date: 14 April 2018
Revised Date: 25 May 2018
Accepted Date: 25 May 2018

Please cite this article as: G. Zou, H. Chen, Path-dependent J-integrals under mixed-mode loads of mode I and mode II, *Theoretical and Applied Fracture Mechanics* (2018), doi: https://doi.org/10.1016/j.tafmec.2018.05.014

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Guangping Zou, He Chen

College of aerospace and civil engineering, Harbin Engineering University, 145 Nantong Avenue, Harbin, 150001, China

MANUSCRIPT

ARTICLE INFO		ABSTRACT
Article history		Because of its path-independence, the J-integral proposed by Rice is widely applied in fracture mechanics.In this paper, the static and dynamic J-integrals under mixed-mode loads of mode I and mode II are investigated on arbitrary integration paths surrounding the crack tip. The J_1 integral is path-independent,but the J_2 integral relies on the coordinate of the beginning and the end of the path. For paths that begins and ends at equidistant points from crack tip on different crack surfaces, the value of J-integrals are equal. Numerical analysis based on equivalent integration area method are carried out. The maximum deviation of solution on different paths are less than 1.23%, and the path-dependence of J-integrals is proved.This work may be helpful in fracture toughness tests of materials.
Keywords: J-integrals path-dependent mixed-mode crack stress intensity factor		

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