

()

(mesh)

J-integral

가

Mutual

integral [4], J_1 J_2

J_k -integral [5] J_2

가

[5].

3.

Paris [1,2]

$$\frac{da}{dN} = C(\Delta K)^m \quad (2)$$

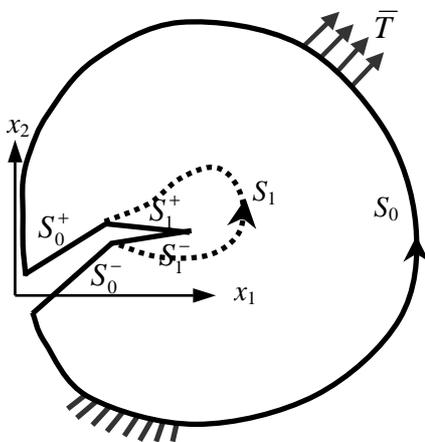
, a , N , C m

ΔK 가

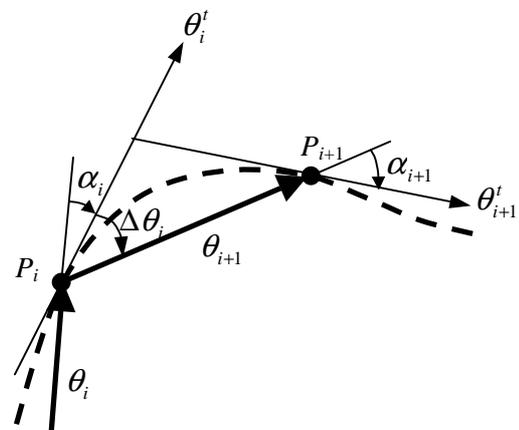
[2].

$$\Delta a_i = C \frac{(\Delta K_i)^m + (\Delta K_{i+1})^m}{2} \Delta N \quad (3)$$

i



1. J-integral



2.

1. 가 .
 2. 가
 3. (3)
 4. 가 2,3 .
 5. 1,2,3,4
- 2 가 2
- , P_i P_{i+1}
- 가 , P_i $\Delta\theta_i$ P_{i+1}
- α_{i+1} 가 ,
- x $(y = bx^2)$ 가
- (2) (3)
- 가 (b)

4.

3 $210 \times 10^2 \text{ kN/cm}^2$

0.3 Paris (2) C m 0.32186×10^{-8} 2.25 $(\sigma_{\min} = 0$

$\text{kN/cm}^2)$ $(\sigma_{\max} = 5 \text{ kN/cm}^2)$ 가 .

$\Delta N = 5000, \Delta N = 50000$ 가 .

가 0.1% , 가 0.00175 rad

(K_{II}/K_I 가 0.1%) .

(EFGM)[6] (DBEM)[2] .

319 146 .

26 가 .

J_k-integral 가 .

10×20 .

가 1160

1372 . 4×4 가 . Mutual integral

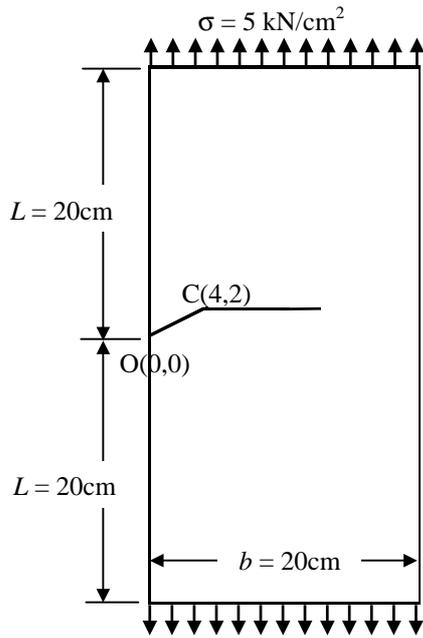
, 가 .

4 .

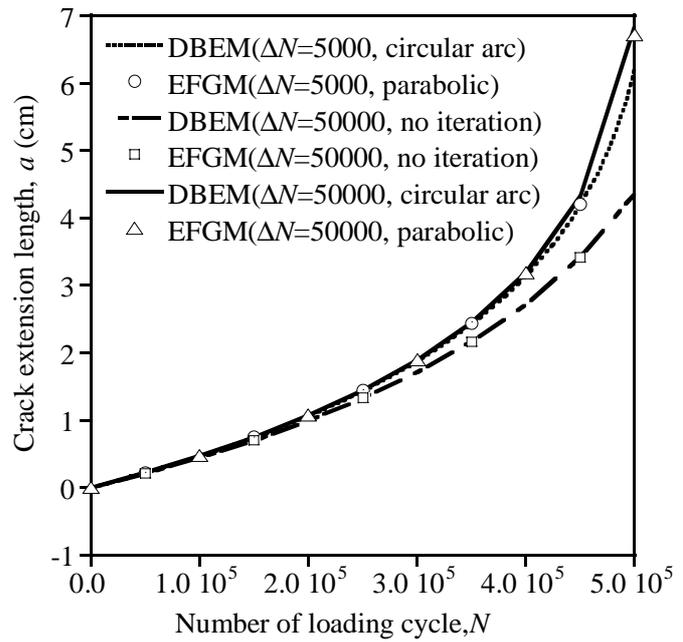
, $\Delta N = 50000$

, 4cm $\Delta N = 5000$

9%, 1.3% 가 .



3.



4.

5.

J-integral

가

2001 5 2002 1

(RIST)

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