Iterative Modeling Scheme of 2-D Mixed-Mode Fatigue Crack Growth

*** *. ** ****



1. (LEFM) 가 1960 [1]. (SIF) 가 J-integral . Portela [2] , Mogilevskaya[3] 가 J-integral 2. **J-integral** 가а G SJ-integral [1]. $G = -\frac{d\Pi}{da} = \oint_{S} (Wn_1 - T_i \frac{\partial u_i}{\partial x_1}) dS = J_1 = J$, W , П n , J-integral [1]. J-integral 1

(1)

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(Kinked point)

가

 S_0

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() () (mesh) . J-integral 7^{1} Mutual integral [4], $J_1 J_2$ J_k -integral [5] . J_2 7^{1}

[5].

•

3.

Paris [1,2] .

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

.

, a , N , C m

. Δ*K* 7† [2].

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

, *i* .



1. 가 . 가 2. . (3) 3. . 가 4. 2,3 . 5. 1,2,3,4 . 2 가 2 P_{i+1} P_i . 가 P_i P_{i+1} $\Delta \theta_i$ 가 α_{i+1} . , $(y = bx^2)$ 7 x (2) (3) . , 가 (*b*) .

4.

3				210×10 ² kN	$/cm^2$
0.3 . Paris	(2) <i>C m</i>	0.32186×10 ⁻⁸	2.25		$(\sigma_{\min} = 0)$
kN/cm ²)	$(\sigma_{max} = 5 \text{ kN/cm}^2)$		가		
ΔN =5000, ΔN =50000	가				
	가 0.1%	,			가 0.00175 rad
(K _{II} /K _I	7 0.1%)				

		(EFGM)[6]	(DBEM)[2]	
	319	146		
26	i		가	

	가					. J _k -integral	
						10×20	
1160					가		
. Mutual integral			가	4×4		1372	
		가			,		
						4	
. Δ <i>N</i> =50000						,	

 ,
 4cm
 ΔN=5000

 9%,
 1.3%
 7
 .



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