

539.375

$N_1, N_2,$ N_1 α Ox \emptyset $N_1 = N_1^*$,
 $N_2 = N_2^*$,
 [1-3] (\quad) (\quad) ,

$-1 \leq d \leq 1$ ($d = (G_2 - G_1) / (G_2 + G_1)$) ,

$-1 \leq -d_1 < d_2 < -d_3 < 0 < d_4 < d_5 < d_6 \leq 1.$
 $(-d_1; d_6)$

[2, 4].

σ_r, σ_θ

$\sigma_r = \frac{A_r}{\sqrt{r}} + 0(1), \quad \sigma_\theta = \frac{A_\theta}{\sqrt{r}} + 0(1),$
 $(-d_1, d_2), (d_5, d_6)$

$A_\theta \sqrt{r} \quad \emptyset \quad A_r / \sqrt{r} -$
 $(-d_2, -d_3) \quad (d_4, d_5)$
 (1)

$(-d_3, d_4)$
 (

(1))

$(-d_2, d_5).$

[4,5]

$$\lim_{r \rightarrow 0} \left\{ \sqrt{r} \frac{\partial \sigma_\theta}{\partial \theta} \right\}_{\theta=\theta^*} \quad (1)$$

$$\lim_{r \rightarrow 0} \left\{ \sqrt{r} \sigma_\theta(\theta^*) \right\} = K_c, \quad (2)$$

K_c ó
 θ^* ó ,

, σ_θ
 $\sigma_{r\theta}$,
 (1), (2). (\emptyset
 σ_θ). ,
 [4,6,7], \emptyset

$$A_\theta^{\max(l,\theta)}(\theta, N_1, N_2, G_1, G_2, V_1, V_2) = K_{0\theta}, \quad d \geq d_5 \quad (3)$$

$K_{0\theta}$ ó , θ .

$$A_\theta^{\max(l,\theta)}(\theta, N_1, N_2, G_1, G_2, V_1, V_2) \quad \alpha \text{ i } \theta$$

$$(3) \quad N_1^* \tilde{A}_\theta^{\max(l,\theta)}(1, \zeta, \theta, G_1, G_2, V_1, V_2) = K_{0\theta}, \quad d \geq d_5, \quad (4)$$

$(\zeta = N_2^*/N_1^*).$

$$N_1^* = \frac{K_{0\theta}}{\tilde{A}_\theta^{\max(l,\theta)}(1, \zeta, \theta, G_1, G_2, V_1, V_2) = K_{0\theta}}, \quad d \geq d_5. \quad (5)$$

[1,2],

σ_r . , ,

(1)-(5)

$$d \leq -d_2.$$

,
 ($r^* < r < r^{**}$,

), $\sigma_{r\theta}$ \emptyset

$$G_2/G_1 > 60$$

$$G_2/G_1 < 0,02$$

(3)-(5)

$$\lim_{r \rightarrow 0} \left\{ \sqrt{r} \frac{\partial}{\partial \theta} \left[\frac{\sigma_\theta(r, \theta, \varphi, l)}{K(\beta)} \right] \right\} = 0, \tag{6}$$

$$\lim_{r \rightarrow 0} [\sqrt{r} \sigma_\theta(r, \theta, \varphi, l)] = K(\beta^*), \tag{7}$$

$$(\beta^* = \theta^* + \varphi),$$

α ó ; φ ó

([3],

1) , 2) : , 3) .

$$K(\beta) = K(0^\circ) \left[\cos^4 \beta + \left(\frac{K(45^\circ)}{K(0^\circ)} - \frac{1}{4} - \frac{K(90^\circ)}{4K(0^\circ)} \right) \sin^2 \beta \cos^2 \beta + \frac{K(90^\circ)}{K(0^\circ)} \sin^4 \beta \right]. \tag{8}$$

$$[4, 5]$$

$$K(\beta) = K(0^\circ) \sqrt{1 - \sin^2 \beta \left[1 - \frac{K(90^\circ)}{K(0^\circ)} \right]}, \tag{9}$$

$K(0^\circ)$, $K(45^\circ)$, $K(90^\circ)$ ó ($\beta = 0^\circ, 45^\circ, 90^\circ$.

((8))

, (9).

$K(0^\circ)$, $K(45^\circ)$, $K(90^\circ)$ $K(0^\circ)$, $K(90^\circ)$

(9).

(8), (9)

(7)

(7)

(7)

)

)

)

$$\sqrt{\frac{E_x}{E_y}} \leq 2$$

σ_θ (8)

$\theta = 0^\circ$.

(45) (0), (

()

(1), (2)

β ,

$$\sqrt{\frac{E_x}{E_y}} > 4$$

σ_θ

(6), (7)

σ_θ

