

$$\Delta\sigma = \sigma_{\max} - \sigma_{\min} \quad (1)$$

σ_{\max} , σ_{\min} -

$$t = t_0 \quad (t_0 = 0) \quad a_0 = l_0 \quad (1)$$

$$\sigma(t) \quad (1)$$

[1]

$$\frac{da}{dN} = f(a, \sigma), \quad (2)$$

a - ; N -

$$a \Big|_{N=N^k} = a_*, \quad (3)$$

N^k -

$$a /_{N=0} = a_0 \quad a_* \quad a_* \quad (3)$$

$$K_{\max} = K_{IC}, \quad (4)$$

K_{\max} -

[2, 3]

$$K(a) = \sigma \sqrt{\pi a} Y(\lambda); \quad \lambda = \frac{a}{b}, \quad (5)$$

$Y(\lambda)$ -

(3)

[0; N^*]

[2, 3]

$$\lambda < 0,7, \quad Y(\lambda) = 1,99 - 0,41\lambda + 18,7\lambda^2 - 38,48\lambda^3 + 53,85\lambda^4$$

$$e^{\lambda} \quad f(a, \sigma)$$

$$f(a, \sigma) = A(\Delta K)^n, \quad (6)$$

n, A -

$$\Delta K = 1,12 \Delta\sigma \sqrt{\pi a}$$

$$(2), \quad (1),$$

$$\frac{da}{dN} = A(1,12(\sigma_{\max} - \sigma_{\min})\sqrt{\pi a})^n. \quad (7)$$

(7)

N_* ,

$$N_* = \frac{2}{\beta(2-n)}(\sqrt{a_*^{2-n}} - \sqrt{a_0^{2-n}}), \quad (8)$$

$$\beta = A(1,12\sqrt{\pi}(\sigma_{\max} - \sigma_{\min}))^n. \quad (9)$$

$$K_{\max} \quad [2]$$

$$K_{\max} = 1,12 \sigma_{\max} \sqrt{\pi a}. \quad (10)$$

(10) (4)

$$a_* = \left(\frac{K_{\max}}{1,2\sqrt{\pi}\sigma_{\max}} \right)^2 = \left(\frac{K_{IC}}{1,12\sqrt{\pi}\sigma_{\max}} \right)^2. \quad (11)$$

1. a_0 , « - l_0 ». [5]

$$l_0(a_1, b_1, c_1); b_1 = l_0. \quad -$$

$$\alpha - , [4] \quad (9) \quad -$$

$$, N_* \quad N_*^f(a_2, b_2, c_2). \quad -$$

$$N_*^d = \frac{1}{4}(a_2 + 2b_2 + c_2)$$

EVM - [5].

$$\sigma_T = 700 / 2^2, \quad K_{IC} = 514, \quad , \quad -$$

$$\sigma_{\max} = 320 \frac{1}{2}, \quad \sigma_{\min} = 175 \frac{1}{2}.$$

[2]

A n -

$$A = 3,553 \cdot 10^{-13}; n = 2,95.$$

$$a_0 \approx 7,6$$

1.

$$a_0^f i N_*^f,$$

$$(2) - (3)$$

$$(8), (9),$$

$$- N_*^d.$$

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$$(N^{exact} = 81889).$$

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$$(N^{exact} = 81889).$$

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	a_0^f	a_1	b_1	c_1	N_*^d
1	a_0^f	6,1	7,6	9,1	
	N_*^f	95741	81889	71570	80271
		a_1	b_1	c_1	
2	a_0^f	7	7,6	8,5	
	N_*^f	86901	81889	75374	81513
		a_1	b_1	c_1	
3	a_0^f	7,4	7,6	8	
	N_*^f	83493	81889	78860	81532

2.

$$\sigma_{\max}, \sigma_{\min},$$

$$a_0,$$

$$\sigma_{\max} (310, 320, 340); \sigma_{\min} (160, 175, 180); a_0(5; 7,6; 9).$$

$$\alpha -$$

$$\sigma_{\max} = \frac{0,5}{315} + \frac{1}{320} + \frac{0,5}{330}; \quad (12)$$

$$\sigma_{\min} = \frac{0,3}{164,5} + \frac{1}{175} + \frac{0,3}{178,5}; \quad (13)$$

$$a_0 = \frac{0,2}{5,52} + \frac{1}{7,6} + \frac{0,2}{8,72} . \quad (14)$$

[4] (1) (12), (13)

$$\Delta\sigma = \frac{0,3}{136,5} + \frac{0,5}{140} + \frac{1}{145} + \frac{0,5}{155} + \frac{0,3}{165} \quad (15)$$

(14),

a_0 ,

$\Delta\sigma \cdot a_0$,

$$\begin{aligned} \Delta\sigma \times a_0 = & \frac{0,2}{(136,5;5,52)} + \frac{0,3}{(136,5;7,6)} + \frac{0,2}{(136,5;8,72)} + \frac{0,2}{(140;5,52)} + \frac{0,5}{(140;7,6)} + \\ & + \frac{0,2}{(140;8,72)} + \frac{0,2}{(145;5,52)} + \frac{1}{(145;7,6)} + \frac{0,2}{(145;8,72)} + \frac{0,2}{(155;5,52)} + \frac{0,5}{(155;7,6)} + \\ & + \frac{0,2}{(155;8,72)} + \frac{0,2}{(165;5,52)} + \frac{0,3}{(165;7,6)} + \frac{0,2}{(165;8,72)}. \end{aligned} \quad (16)$$

(12), (15), (16)

a_* N_*

(8), (9) (11).

$$a_*^f = \frac{0,5}{71,8} + \frac{1}{69,6} + \frac{0,5}{65,4} \quad (17)$$

$$\begin{aligned} N_*^f = & \frac{0,2}{122530} + \frac{0,3}{97863} + \frac{0,2}{88357} + \frac{0,2}{113712} + \frac{0,5}{90820} + \frac{0,2}{81998} + \frac{0,2}{102530} + \\ & + \frac{1}{81889} + \frac{0,2}{79934} + \frac{0,2}{84218} + \frac{0,5}{67264} + \frac{0,2}{60730} + \frac{0,2}{70034} + \frac{0,3}{55935} + \frac{0,2}{50501}. \end{aligned} \quad (18)$$

w_i EVM – , [5].

$$\begin{aligned} w_1 &= \frac{1}{2} (\mu_1 + \max_{1 \leq j \leq m} \mu_j - \max_{1 \leq j \leq m} \mu_j); \\ w_i &= \frac{1}{2} (\max_{1 \leq j \leq i} \mu_j - \max_{1 \leq j \leq i} \mu_j + \max_{i \leq j \leq m} \mu_j - \max_{i \leq j \leq m} \mu_j); \\ i &= 2, 3, \dots, m-1; \\ w_m &= \frac{1}{2} (\max_{1 \leq j \leq m} \mu_j - \max_{1 \leq j \leq m} \mu_j + \mu_m); \sum_{i=1}^m w_i = 1. \end{aligned} \quad (19)$$

$$(17) \quad (18) \quad w = \{0,25; 0,5; 0,25\}$$

$$w = \{0,1; 0,05; 0; 0; 0,1; 0; 0; 0,5; 0; 0; 0,1; 0; 0; 0,05; 0,1\} .$$

$$(18) \quad , \quad \mu$$

$$w = 0$$

$$N_*^f = \frac{0,2}{50501} + \frac{0,3}{55935} + \frac{0,5}{67264} + \frac{1}{81889} + \frac{0,5}{90820} + \frac{0,3}{97863} + \frac{0,2}{122530}$$

$$w = \{0,1; 0,05; 0,1; 0,5; 0,1; 0,05; 0,1\}.$$

$$a_*^d \quad N_*^d \quad - \quad -$$

$$\text{EVM [5]: } a_*^d = \sum_{i=1}^3 w_i a_{*i}^f = 69,1(\quad); \quad N_*^d = \sum_{i=1}^7 w_i N_{*i}^f = 81740$$

$$a_* \quad N_* \quad \sigma_{\max} = 320 M \quad ,$$

$$\sigma_{\min} = 175 M \quad , \quad a_0 = 7,6 \quad a_*^e = 69,6 \quad ; \quad N_*^e = 81889 \quad .$$

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