



621.311.017

6-20

() 6-20/0,38
[1, 2]

$$r = r + r ,$$

[1, 2].

[1]:

$$\Delta W = \frac{W_P^2 k_P^2 + W_Q^2 k_Q^2}{U^2 T} r , \quad (1)$$

W_P, W_Q –

$T ; k_P, k_Q$ –

$Q(t)$

$P(t)$

(1)

r .

10 % .

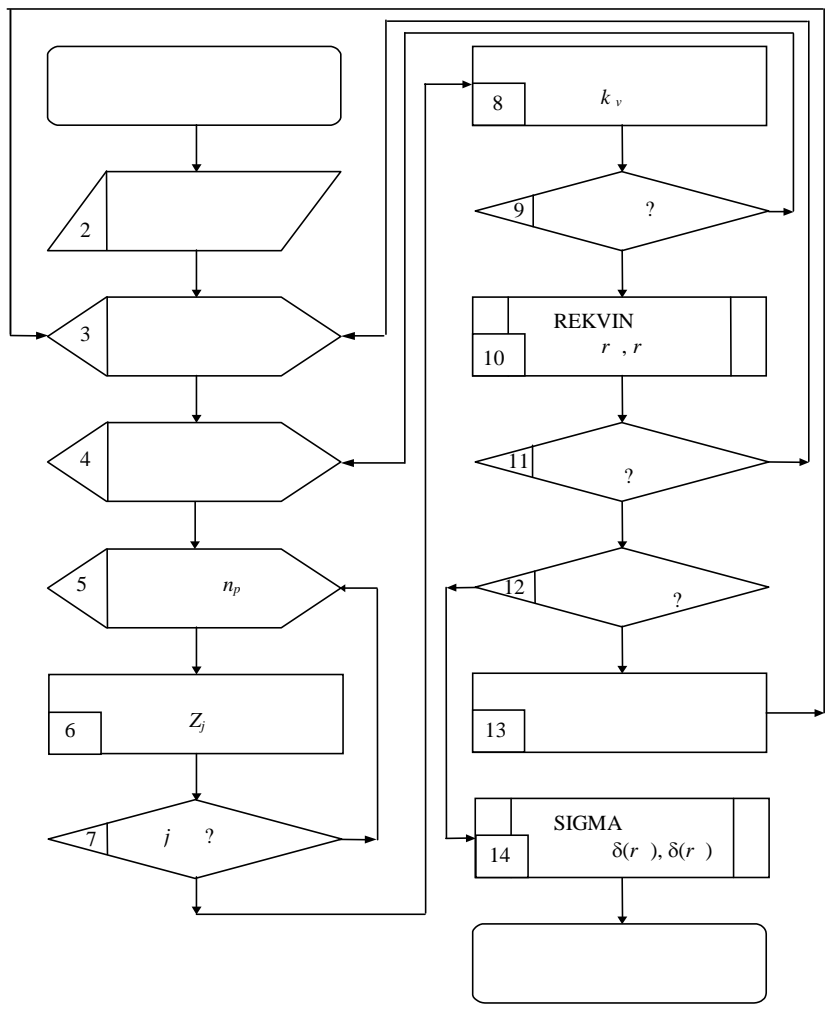
r , r

[3].

$\delta(r)$, $\delta(r)$

m

. 1.



. 1.

$\delta(r)$, $\delta(r)$

m
 $k \in \overline{1, m}$

$\sigma[k]$:
 $M[k]$

$$f(k) = \frac{1}{\sigma[k] \sqrt{2\pi}} e^{-\frac{(k - M[k])^2}{2\sigma^2[k]}}, \quad (2)$$

$f(k)$ –
 $Z_j (j = \overline{1, h_p})$
 h_p
 $[0; 1]$,
 5...7

8:

$$k = \sqrt{\frac{3}{n_p}} \sigma[k] \sum_{j=1}^{n_p} 2(z_j - 1) + M[k], \quad k \in \overline{1, m}. \quad (3)$$

9)
 $r \in \overline{1, 10}$ [2]:

$$r = \frac{\Delta P}{3I^2}; \quad (4)$$

$$r = \frac{\Delta P}{3I^2}, \quad (5)$$

$\Delta P, \Delta P$ –

; I –

(« » 11) N_0
 $r_j, r_j (j = \overline{1, N_0})$,
 $\overline{r}, \overline{r}$

S_r, S_r .

ε (12)

N_p (12) [3]:

$$N_p = \frac{t_{\alpha} S_r^2}{\varepsilon^2}, \quad (6)$$

$t, -$

SIGMA)

$\delta(r)$:

$$\delta(r) = \frac{S_r}{r}, \delta(r) = \frac{S_r}{r}. \quad (7)$$

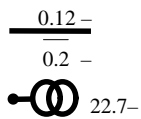
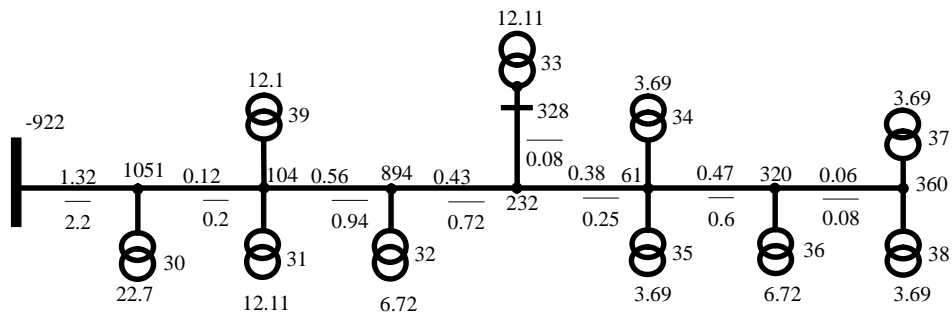
(. 2)

$$\sigma[k] = 0,16,$$

$$: M[k] = 0,1 \dots 1,5 \quad 0,1.$$

1

. 3.



. 2.

-922

6-20

);

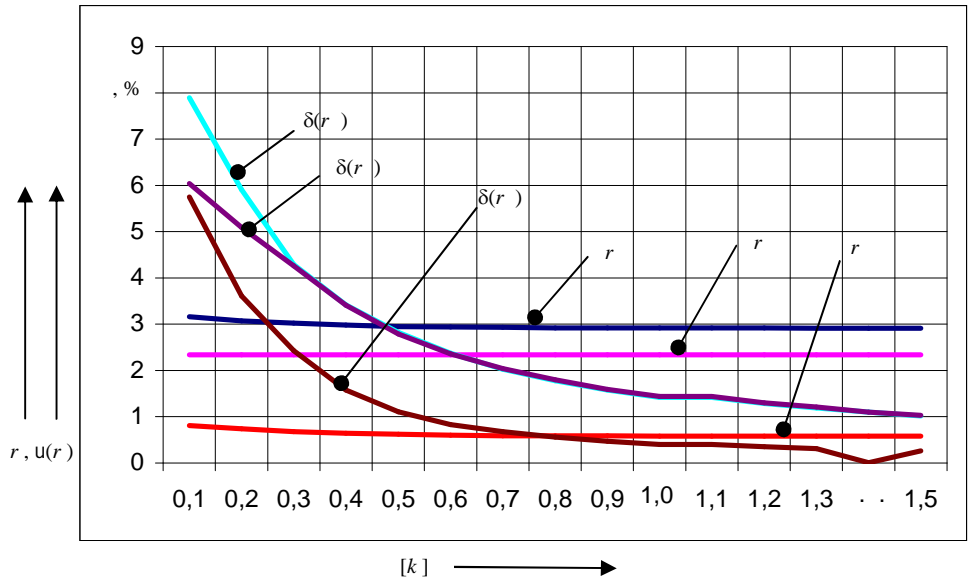
7,89 %;

$M[k] = 0,1 \dots 0,8$

$$\delta(r) = f(M[k])$$

$\dagger[k] = 0,16$

| | | | | | | | | | | | | | | | | |
|----------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| - | - | | | | | | | | | | | | | | | |
| - | - | | | | | | | | | | | | | | | |
| 1 | 2 | 0,1 | 0,2 | 0,3 | 0,4 | 0,5 | 0,6 | 0,7 | 0,8 | 0,9 | 1,0 | 1,1 | 1,2 | 1,3 | 1,4 | 1,5 |
| <i>r</i> | | 3,16 | 3,07 | 3,02 | 2,98 | 2,95 | 2,94 | 2,93 | 2,92 | 2,92 | 2,92 | 2,92 | 2,92 | 2,91 | 2,91 | 2,91 |
| | % | 7,89 | 5,91 | 4,29 | 3,42 | 2,82 | 2,37 | 2,03 | 1,78 | 1,58 | 1,42 | 1,42 | 1,29 | 1,19 | 1,10 | 1,02 |
| <i>r</i> | | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 | 2,34 |
| | % | 6,04 | 5,09 | 4,26 | 3,41 | 2,79 | 2,36 | 2,04 | 1,8 | 1,59 | 1,44 | 1,44 | 1,30 | 1,21 | 1,10 | 1,03 |
| <i>r</i> | | 0,81 | 0,74 | 0,68 | 0,64 | 0,62 | 0,60 | 0,59 | 0,59 | 0,59 | 0,58 | 0,58 | 0,58 | 0,58 | 0,58 | 0,58 |
| | % | 5,75 | 3,61 | 2,43 | 1,58 | 1,11 | 0,83 | 0,68 | 0,56 | 0,47 | 0,40 | 0,40 | 0,35 | 0,31 | 0,01 | 0,26 |



. 3. $\delta(r), \delta(r), \delta(r) = f(M[k])$

6-20 ,

r , *r*

Δ : «
 ».
 [4].
 Δ
 δ_{ij} ,
 6-20 ,
 Δ
 $\delta_{ij} \approx 0, \cos \delta_{ij} \approx 1, \sin \delta_{ij} \approx 0, B_{ij} \approx \frac{r_{ij}}{U_i U_j}, C_{ij} \approx 0$

$$\Delta P = \sum_{i=1}^{n-1} \sum_{j=1}^{n-1} B_{ij} (P_i P_j + Q_i Q_j), \quad (8)$$

$n -$; $B_{ij}, C_{ij} -$.

(8)

P_1

:

$$\frac{\partial \Delta P}{\partial P_1} = 2P_1 \frac{r_{11}}{U_1^2} + 2P_2 \frac{r_{12}}{U_1 U_2} + 2P_3 \frac{r_{13}}{U_1 U_3} + \dots,$$

$r_{11} -$

1; $r_{12}, r_{13} \dots -$

6-20

$U_1 = U_2 = \dots = U$,

r_{ii}

r_{ij}

(),

$i j$

$$M[k] \quad \sigma[k].$$

. 2.

. 2,

. 3-4.

. 3

$\partial \Delta P / \partial P_i$

$$M[k] = 0,7$$

$\sigma[k]$

0,001...0,2,

. 4 -

$$\partial \Delta P / \partial P_i$$

$$\sigma[k] = 0,001$$

$$M[k] = 0,1 \dots 0,9.$$

. 2,

| | | | | | | | | | | |
|----|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| | 30 | 31 | 39 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |
| 30 | 24,02 | 1,32 | 1,32 | 1,32 | 1,32 | 1,32 | 1,32 | 1,32 | 1,32 | 1,32 |
| 31 | 1,32 | 13,55 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 |
| 39 | 1,32 | 1,44 | 13,55 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 | 1,44 |
| 32 | 1,32 | 1,44 | 1,44 | 8,72 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 |
| 33 | 1,32 | 1,44 | 1,44 | 2,00 | 14,74 | 2,436 | 2,436 | 2,436 | 2,436 | 2,436 |
| 34 | 1,32 | 1,44 | 1,44 | 2,00 | 2,436 | 6,5 | 2,815 | 2,815 | 2,815 | 2,815 |
| 35 | 1,32 | 1,44 | 1,44 | 2,00 | 2,436 | 2,815 | 6,5 | 2,815 | 2,815 | 2,815 |
| 36 | 1,32 | 1,44 | 1,44 | 2,00 | 2,436 | 2,815 | 2,815 | 10,01 | 3,289 | 3,289 |
| 37 | 1,32 | 1,44 | 1,44 | 2,00 | 2,436 | 2,815 | 2,815 | 3,289 | 7,04 | 3,352 |
| 38 | 1,32 | 1,44 | 1,44 | 2,00 | 2,436 | 2,815 | 2,815 | 3,289 | 3,352 | 7,04 |

3

4

. 2, % $M[k] = 0,7$

| | | | | | |
|----|-------------|--------|--------|--------|--------|
| | $\sigma[k]$ | | | | |
| | 0,001 | 0,05 | 0,1 | 0,15 | 0,2 |
| 30 | 7,756 | 7,159 | 6,553 | 5,951 | 5,352 |
| 31 | 7,734 | 7,605 | 7,474 | 7,343 | 7,214 |
| 39 | 7,730 | 7,388 | 7,041 | 6,696 | 6,353 |
| 32 | 9,101 | 9,302 | 9,506 | 9,709 | 9,911 |
| 33 | 10,652 | 11,011 | 11,376 | 11,738 | 12,099 |
| 34 | 10,923 | 10,941 | 10,959 | 10,977 | 10,995 |
| 35 | 10,926 | 11,142 | 11,361 | 11,579 | 11,795 |
| 36 | 11,864 | 11,948 | 12,034 | 12,120 | 12,204 |
| 37 | 11,655 | 11,626 | 11,598 | 11,569 | 11,541 |
| 38 | 11,660 | 11,878 | 12,098 | 12,318 | 12,536 |

. 2 %, $\sigma[k] = 0,001$

| | | | | | |
|----|--------|--------|--------|--------|--------|
| | $[k]$ | | | | |
| | 0,1 | 0,3 | 0,5 | 0,7 | 0,9 |
| 30 | 7,682 | 7,142 | 7,751 | 7,756 | 7,154 |
| 31 | 7,718 | 7,609 | 7,733 | 7,734 | 7,613 |
| 39 | 7,688 | 7,603 | 7,727 | 7,730 | 7,611 |
| 32 | 9,126 | 9,293 | 9,103 | 9,101 | 9,289 |
| 33 | 10,696 | 10,480 | 10,655 | 10,652 | 10,473 |
| 34 | 10,925 | 11,189 | 10,923 | 10,923 | 11,189 |
| 35 | 10,953 | 11,194 | 10,928 | 10,926 | 11,189 |
| 36 | 11,874 | 11,795 | 11,865 | 11,864 | 11,793 |
| 37 | 11,651 | 11,842 | 11,654 | 11,655 | 11,843 |
| 38 | 11,687 | 11,852 | 11,662 | 11,660 | 11,847 |

. 3, 4

(30...100 , $r_{30-30} = 24,02$;
 38...400 , $r_{38-38} = 7,04$; 32...250 , $l_{32-} = 3,34$, $r_{39-39} =$
 $= 8,72$; 36 - 250 , $l_{36-} = 5,14$ $> l_{32-}$, $r_{36-36} = 10,01$).

($r_{31-30} = 1,32$, ..., $r_{38-37} = 3,352$).

. 3, 4

. 3

$$\frac{\partial \Delta P}{\partial P_i},$$

$$(\sigma[k] = 0,001; 0,05; 0,1; 0,15 \quad 0,2)$$

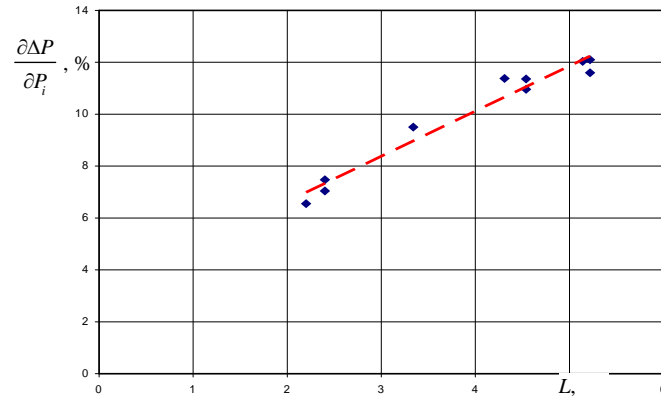
$$4, M[k] = 0,1 \dots 0,9)$$

()

. 2

L

. 4.



. 4.

$$(\sigma[k] = 0,7, \sigma[k] = 0,001)$$

. 2

[2]

1.

.., 1996. - 46 .

2.

3.

4.

..

30.03.2005