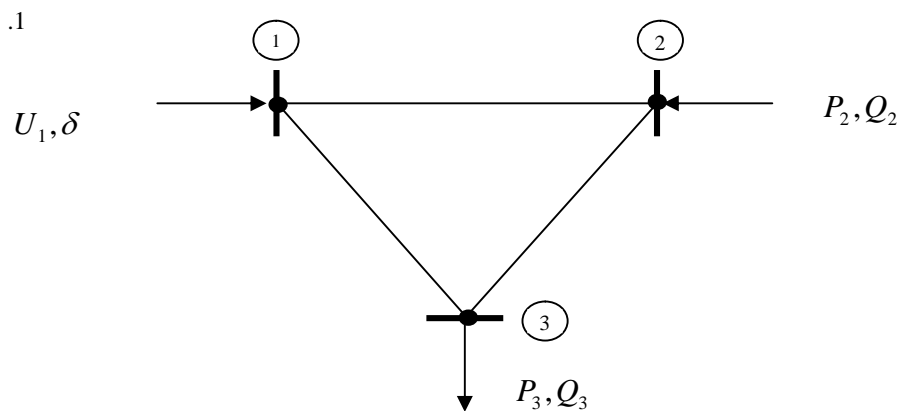


$$X = X(Y) \cdot \dots$$

$$\bar{V} = V(Y) + n_V,$$

$$Y^*, V(Y^*), \bar{V} \dots$$



$$x = (U_1, U_2, U_3, P_1, Q_1, P_2, Q_2, P_3, Q_3, P_{12}, Q_{12}, P_{21}, Q_{23}, P_{31}, Q_{31}), \delta_1$$

$$U_1, \delta_1, P_2, Q_2, P_3, Q_3$$

	P_1	P_{1-2}	P_{1-3}	P_2	P_{2-1}	P_{2-3}	P_3	P_{3-1}	P_{3-2}
P ()	58.2	-10.2	-49.3	12.7	9.9	-22.9	-72.5	49.9	23.3
P ()	59.994	-9.941	-50.053	12.7	9.933	-22.633	-72.5	49.889	22.611

	Q_1	Q_{1-2}	Q_{1-3}	Q_2	Q_{2-1}	Q_{2-3}	Q_3	Q_{3-1}	Q_{3-2}
Q ()	7.5	-0.8	-6.9	8.3	0.7	-8.9	-15.1	6.4	9.1
Q ()	7.403	-0.68	-6.723	8.3	0.663	-8.963	-15.1	6.305	8.795

	U_1	δ_1	U_2	δ_2	U_3	δ_3
U ()	119.4	0	119.5	-	119	-
U (), δ ()	119.4	0	119.294	-0.001699	118.889	-0.0078

$$P_1=2.23\%; Q_1=2.6\%; P_2=1.31\%; Q_2=1.12\%; P_3=0.96\%; Q_3=2.64\%$$

$$[3] F = (\bar{V} - V(x)) R^{-1} (\bar{V} - V(x)) \quad (4)$$

$$U_1, \delta_1, P_2, Q_2, P_3, Q_3 \quad \delta^2 = \left(\frac{\sqrt{a^2 + b^2}}{100} \right)^2$$

$$\delta_{\delta_2}^2 = \delta_{\delta_3}^2 = 0.0001; \delta_{U_2}^2 = \delta_{U_3}^2 = 0.25; \delta_{P_2}^2 = 0.0144; \delta_{Q_2}^2 = 0.0064; \delta_{P_3}^2 = 4.84; \delta_{Q_3}^2 = 0.2116$$

$$|R| = \begin{vmatrix} \delta_{\delta_2}^2 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \delta_{\delta_3}^2 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \delta_{U_2}^2 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \delta_{U_3}^2 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \delta_{P_2}^2 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \delta_{P_3}^2 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \delta_{Q_2}^2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \delta_{Q_3}^2 \end{vmatrix} \quad (7)$$

$$\frac{\partial w_k}{\partial x} :$$

$$\left| \frac{\partial w_k}{\partial x} \right| = \begin{matrix} \begin{matrix} \frac{\partial w_{P_2}}{\partial \delta_2} & \frac{\partial w_{P_2}}{\partial \delta_3} & \frac{\partial w_{P_2}}{\partial U_2} & \frac{\partial w_{P_2}}{\partial U_3} & \frac{\partial w_{P_2}}{\partial P_2} & \frac{\partial w_{P_2}}{\partial P_3} & \frac{\partial w_{P_2}}{\partial Q_2} & \frac{\partial w_{P_2}}{\partial Q_3} \\ \frac{\partial w_{P_3}}{\partial \delta_2} & \frac{\partial w_{P_3}}{\partial \delta_3} & \frac{\partial w_{P_3}}{\partial U_2} & \frac{\partial w_{P_3}}{\partial U_3} & \frac{\partial w_{P_3}}{\partial P_2} & \frac{\partial w_{P_3}}{\partial P_3} & \frac{\partial w_{P_3}}{\partial Q_2} & \frac{\partial w_{P_3}}{\partial Q_3} \end{matrix} \\ \begin{matrix} \frac{\partial w_{Q_2}}{\partial \delta_2} & \frac{\partial w_{Q_2}}{\partial \delta_3} & \frac{\partial w_{Q_2}}{\partial U_2} & \frac{\partial w_{Q_2}}{\partial U_3} & \frac{\partial w_{Q_2}}{\partial P_2} & \frac{\partial w_{Q_2}}{\partial P_3} & \frac{\partial w_{Q_2}}{\partial Q_2} & \frac{\partial w_{Q_2}}{\partial Q_3} \\ \frac{\partial w_{Q_3}}{\partial \delta_2} & \frac{\partial w_{Q_3}}{\partial \delta_3} & \frac{\partial w_{Q_3}}{\partial U_2} & \frac{\partial w_{Q_3}}{\partial U_3} & \frac{\partial w_{Q_3}}{\partial P_2} & \frac{\partial w_{Q_3}}{\partial P_3} & \frac{\partial w_{Q_3}}{\partial Q_2} & \frac{\partial w_{Q_3}}{\partial Q_3} \end{matrix} \end{matrix} \quad (8)$$

$$\delta_2 = 0 \quad \delta_3 = 0,$$

4:

$$\begin{matrix} \delta_2 \\ \delta_3 \\ U_2 \\ U_3 \\ P_2 \\ P_3 \\ Q_2 \\ Q_3 \end{matrix} = \begin{matrix} \delta_2 \\ \delta_3 \\ U_2 \\ U_3 \\ P_2 \\ P_3 \\ Q_2 \\ Q_3 \end{matrix} - |R| \cdot \left| \frac{\partial w_k}{\partial x} \right|^T \cdot \left[\left| \frac{\partial w_k}{\partial x} \right| \cdot |R| \cdot \left| \frac{\partial w_k}{\partial x} \right|^T \right]^{-1} \cdot \begin{matrix} w_{P_2} \\ w_{P_3} \\ w_{Q_2} \\ w_{Q_3} \end{matrix} \quad (9)$$

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	P_1	P_{1-2}	P_{1-3}	P_2	P_{2-1}	P_{2-3}	P_3	P_{3-1}	P_{3-2}
$P ()$	58.2	-10.2	-49.3	12.7	9.9	-22.9	-72.5	49.9	23.3
$P_{i()}$	59.921	-9.921	-50	12.7	9.914	-22.614	-72.427	49.836	22.591

	Q_1	Q_{1-2}	Q_{1-3}	Q_2	Q_{2-1}	Q_{2-3}	Q_3	Q_{3-1}	Q_{3-2}
$Q ()$	7.5	-0.8	-6.9	8.3	0.7	-8.9	-15.1	6.4	9.1
$Q_{i()}$	7.401	-0.678	-6.723	8.3	0.66	-8.96	-15.098	6.305	8.793

	U_1	δ_1	U_2	δ_2	U_3	δ_3
$U ()$	119.4	0	119.5	-	119	-
$U_{i()}, \delta ()$	119.4	0	119.294	-0.001699	118.889	-0.0078

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(P_3^M, Q_3^M)

$(\delta_{P_3}^2, \delta_{Q_3}^2)$

$P_3 Q_3$

$$P_3 = P_3^M \quad Q_3 = Q_3^M$$

$$P_3^M = 64.4 ; Q_3^M = 13.3 ;$$

$$\delta_{P_3} = 22 ; \delta_{Q_3} = 4.6.$$

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	P_1	P_{1-2}	P_{1-3}	P_2	P_{2-1}	P_{2-3}	P_3	P_{3-1}	P_{3-2}
$P_{1()}$	59.921	-9.921	-50	12.7	9.914	-22.614	-72.427	49.836	22.591
$P_{2()}$	46.772	-6.398	-40.374	12.75	6.395	-19.145	-59.397	40.268	19.129

	Q_1	Q_{1-2}	Q_{1-3}	Q_2	Q_{2-1}	Q_{2-3}	Q_3	Q_{3-1}	Q_{3-2}
$Q_{1()}$	7.401	-0.678	-6.723	8.3	0.66	-8.96	-15.098	6.305	8.793
$Q_{2()}$	5.304	0.239	-5.543	8.37	-0.246	-8.124	-13.272	5.271	8.001

	U_1	δ_1	U_2	δ_2	U_3	δ_3
$U_{1()}, \delta_{1()}$	119.4	0	119.294	-0.001696	118.889	-0.00779
$U_{2()}, \delta_{2()}$	119.4	0	119.346	-0.001146	118.985	-0.006279

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$P_{23} \quad Q_{23}$

$$x = (U_1, \delta_1, P_2, Q_2, P_3, Q_3, P_{23}, Q_{23}),$$

$$P_3 = P_{23} - \Delta P_{23} + P_{31} - \Delta P_{31}; \quad Q_3 = Q_{23} - \Delta Q_{23} + Q_{31} - \Delta Q_{31},$$

$$P_{23}, Q_{23}, P_{31}, Q_{31} -$$

$$\Delta P_{23}, \Delta Q_{23} -$$

$$\Delta P_{kj} = \frac{(P_{kj}^2 + Q_{kj}^2) \cdot R_{kj}}{U_k^2}, \quad R_{kj} -$$

$$\Delta P_{kj} = \frac{(P_{kj}^2 + Q_{kj}^2) \cdot \dots}{U_k^2}, \quad \dots$$

[2]:

$$\bar{S}_{kj} = \sqrt{3} \bar{U}_k^* I_{kj} = -\bar{U}_k^* (U_k - U_j) Y_{kj},$$

$$\bar{U}_k - \quad k,$$

$$I_{kj} - \quad kj,$$

$$U_k^*, U_j^*, Y_{kj}^* -$$

kj .

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$$P_{kj} = ((U'_k)^2 - U'_k U'_j + (U''_k)^2 - U''_k U''_j) g_{kj} + (U''_k U'_j - U'_k U''_j) b_{kj};$$

$$Q_{kj} = (U'_k U''_j - U''_k U'_j) g_{kj} + ((U'_k)^2 - U'_k U'_j + (U''_k)^2 - U''_k U''_j) b_{kj},$$

$$U' = |U| \cos(\delta) -$$

$$U'' = |U| \sin(\delta) -$$

$$g_{kj}, b_{kj} -$$

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	P_1	P_{1-2}	P_{1-3}	P_2	P_{2-1}	P_{2-3}	P_3	P_{3-1}	P_{3-2}
$P_{1()}$	59.921	-9.921	-50	12.7	9.914	-22.614	-72.427	49.836	22.591
$P_{3()}$	60.473	-10.081	-50.392	12.701	10.073	-22.774	-72.977	50.226	22.751
$K (%)$	0.9	1.6	0.78	0.008	1.6	0.44	0.76	0.86	0.71

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	Q_1	Q_{1-2}	Q_{1-3}	Q_2	Q_{2-1}	Q_{2-3}	Q_3	Q_{3-1}	Q_{3-2}
$Q_{1()}$	7.401	-0.678	-6.723	8.3	0.66	-8.96	-15.098	6.305	8.793
$Q_{3()}$	6.977	-0.577	-6.4	8.301	0.559	-8.86	-14.668	5.978	8.69
$K (%)$	5.7	14.9	4.8	0.001	15.3	1.11	12.85	5.18	1.17

	U_1	δ_1	U_2	δ_2	U_3	δ_3
$U_{1()}, \delta_{1()}$	119.4	0	119.294	-0.001696	118.889	-0.00779
$U_{3()}, \delta_{3()}$	119.4	0	119.295	-0.001732	118.892	-0.007876
$K (%)$	-	-	0.0008	2.1	0.0025	1.1

$K (%) -$

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