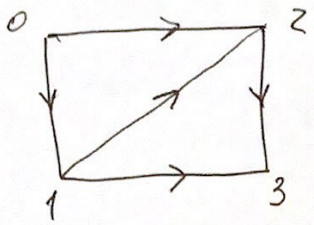
2.1 Ходзева Ю. 611




| | 1 | 2 | 3 |
|---|---|---|---|
| 0-1 | 1/2 | 1/2 | 1/2 |
| 0-2 | 1/2 | 1/2 | 1/2 |
| 1-2 | -1/3 | 1/3 | 0 |
| 1-3 | -1/6 | 1/6 | 1/2 |
| 2-3 | 1/6 | -1/6 | 1/2 |
| шар.1 | +1 | | -1 |
| шар.2 | | +1 | -1 |
| шар.3 | +1 | -1 | |

1)

$$\Delta p_{10} = \frac{\partial p_{10}}{\partial p_1} \cdot \Delta p_1 + \frac{\partial p_{10}}{\partial p_3} \cdot \Delta p_3$$

$$\Delta p_{10} = \frac{1}{2} \cdot 1 + \frac{1}{2} \cdot (-1) = 0$$

$$\Delta p_{20} = \frac{\partial p_{20}}{\partial p_1} \cdot \Delta p_1 + \frac{\partial p_{20}}{\partial p_3} \Delta p_3$$

$$\Delta p_{20} = \frac{1}{2} \cdot 1 + \frac{1}{2}(-1) = 0$$

$$\Delta p_{21} = \left(-\frac{1}{3}\right) \cdot 1 + 0 \cdot (-1) = -\frac{1}{3}$$

$$\Delta p_{31} = -\frac{1}{6} \cdot 1 + \frac{1}{2} \cdot (-1) = -\frac{2}{3}$$

$$\Delta p_{32} = \frac{1}{6} - \frac{1}{2} = -\frac{1}{3}$$

2) $\Delta p_{10} = \frac{1}{2} - \frac{1}{2} = 0$

$\Delta p_{20} = \frac{1}{2} - \frac{1}{2} = 0$

$\Delta p_{21} = \frac{1}{3}$

$\Delta p_{31} = \frac{1}{6} - \frac{1}{2} = -\frac{1}{3}$

$\Delta p_{32} = -\frac{1}{6} - \frac{1}{2} = -\frac{2}{3}$

3) $\Delta p_{10} = 0$ $\Delta p_{32} = +1/3$

$\Delta p_{20} = 0$

$\Delta p_{21} = -2/3$

$\Delta p_{31} = -1/3$

2. $1.03\,\Delta p_3 - \Delta p_0 - 1.0\,\Delta p_1 - 0,88\,\Delta p_2 = 0$

1) $k = 1;\ j = 3 \Rightarrow \Delta p_1 = 10 \Rightarrow$ т.к. $\Delta p_0 = 0$

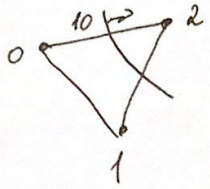
$$\Delta p_{13} = \frac{\partial p_{13}}{\partial p_1}\,\Delta p_1 \cdot 1,01 = \frac{\partial p_{13}}{\partial p_3}\,\Delta p_3 \cdot 1.03 \Rightarrow$$

$$\Rightarrow \Delta p_3 = 10,1 \cdot \left(-\frac{1}{6}\right) / \left(\frac{1}{2} \cdot 1,03\right) \approx -3,2 \Rightarrow$$

Аналогично для др. узлов

Задача 3. Кобзева В. 611

| 1 | 2 |
|---|---|
| 0,9 | 1.1 |




$\Gamma_0$: $C_0 = 1$, $\bar{\rho}_0 = 15$

$\Gamma_2$: $C_2 = 2$, $\bar{\rho}_2 = 10$

$\Gamma_2$: $C_п = +\infty$, $\bar{\rho}_п = 20$

| | 1 | 2 | |
|---|---|---|---|
| | 2/3 | 1/3 | 0 - 1 |
| | 1/3 | 2/3 | 0 - 2 |
| | 1/3 | 1/3 | 1 - 2 |

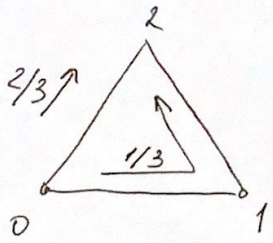
$$C^п \rho^п - C_0 \rho_0 - C_2 \rho_2 \to max$$

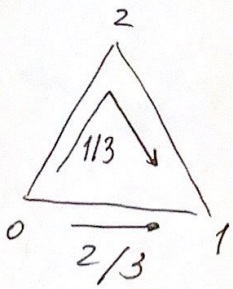
$$\rho_{02} + \rho_{12} \le 10$$

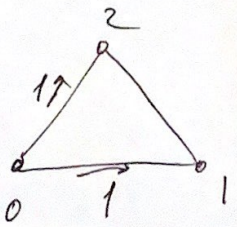
$$0 \le \rho_п \le 20 = \bar{\rho}_п$$

$$0 \le \rho_0 \le 15 = \bar{\rho}_0$$

$$0 \le \rho_2 \le 10 = \bar{\rho}_2$$



$$\frac{\partial \rho_{01}}{\partial \rho_1} = \frac{2}{3} \qquad \frac{\partial \rho_{01}}{\partial \rho_2} = \frac{1}{3}\ ; \qquad \frac{\partial \rho_{02}}{\partial \rho_1} = \frac{1}{3}\ ; \qquad \frac{\partial \rho_{02}}{\partial \rho_2} = \frac{2}{3}$$

$$\frac{\partial \rho_{12}}{\partial \rho_1} = \frac{1}{3} \qquad \frac{\partial \rho_{12}}{\partial \rho_2} = \frac{1}{3}$$

$$\rho_{ij} \approx b_{ij}(\delta_i - \delta_j) - \frac{q_{ij}}{2}(\delta_i - \delta_j)^2$$

$$\rho = B_n \delta + z(\delta)$$

$$\frac{d\rho}{d\delta} = B_n \frac{d\delta}{d\rho} = B_n^{-1}$$

$$\nabla_\rho^T \ell(\delta(\rho)) = \nabla_\delta^T \ell(\delta) B_n^{-1} = 0$$

$$\nabla_\rho^T \rho_{ij}(\delta(\rho)) = \nabla_\delta^T \rho_{ij} B_n^{-1}$$

$$\nabla_\delta^T \rho_{01} = \left(\frac{2}{3}; \frac{1}{3}\right) \quad \nabla^T \rho_{02} = \left(\frac{1}{3}; \frac{2}{3}\right)$$

$$\nabla^T \rho_{12} = \left(\frac{1}{3}; \frac{1}{3}\right)$$

$$\Rightarrow \nabla_\delta^T \rho_{01} B_n^{-1} \left(\frac{2}{3}; \frac{1}{3}\right)$$

$$\rho_{01} = \delta_0 - \delta_1 = -\delta_1\ ; \quad \nabla_\delta^T \rho_{01} \begin{pmatrix} -1 \\ 0 \end{pmatrix} \Rightarrow$$

$$(-1; 0) B_n^{-1} = \left(\frac{2}{3}; \frac{1}{3}\right)$$

$$\rho_{02} = \delta_0 - \delta_2 = -\delta_2$$

$$\nabla_\delta^T \rho_{02} B_n^{-1} = \left(\frac{1}{3}; \frac{2}{3}\right)$$