

1. $i = 1, 2, \dots, N_r - 1; j = 1, 2, \dots, N_z - 1$

$$-\left[h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right) \frac{u_{i+1,j} - u_{i,j}}{h_r} - h_z r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, z_j \right) \frac{u_{i,j} - u_{i-1,j}}{h_r} + h_r r_i k_2 \left(r_i, z_{j+\frac{1}{2}} \right) \frac{u_{i,j+1} - u_{i,j}}{h_z} - h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right) \frac{u_{i,j} - u_{i,j-1}}{h_z} \right] = r_i h_r h_z f_{i,j} \quad \text{при } i = 1, 2, \dots, N_r - 1; j = 1, 2, \dots, N_z - 1 \quad \dots (1)$$

$$\begin{aligned} a_m &= \frac{h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\ b_m &= - \frac{h_z r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, z_j \right)}{h_r} \\ c_m &= \frac{h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right)}{h_r} + \frac{h_z r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, z_j \right)}{h_r} + \frac{h_r r_i k_2 \left(r_i, z_{j+\frac{1}{2}} \right)}{h_z} + \frac{h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\ d_m &= \frac{h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right)}{h_r} \\ e_m &= - \frac{h_r r_i k_2 \left(r_i, z_{j+\frac{1}{2}} \right)}{h_z} \\ g_m &= r_i h_r h_z f_{i,j} \end{aligned}$$

2. $i = 0; j = 1, 2, \dots, N_z - 1$

$$-\left[h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right) \frac{u_{i+1,j} - u_{i,j}}{h_r} - 0 + h_r \frac{r_{i+\frac{1}{2}}}{4} k_2 \left(r_i, z_{j+\frac{1}{2}} \right) \frac{u_{i,j+1} - u_{i,j}}{h_z} - h_r \frac{r_{i+\frac{1}{2}}}{4} k_2 \left(r_i, z_{j-\frac{1}{2}} \right) \frac{u_{i,j} - u_{i,j-1}}{h_z} \right] = h_r h_z \frac{r_{i+\frac{1}{2}}}{4} f_{i,j}$$

при $i = 0; j = 1, 2, \dots, N_z - 1 \quad \dots (5)$

$$\begin{aligned} a_m &= \frac{h_r \frac{r_{i+\frac{1}{2}}}{4} k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\ b_m &= 0 \\ c_m &= \frac{h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right)}{h_r} + \frac{h_r r_i k_2 \left(r_i, z_{j+\frac{1}{2}} \right)}{h_z} + \frac{h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\ d_m &= \frac{h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right)}{h_r} \\ e_m &= \frac{h_r \frac{r_{i+\frac{1}{2}}}{4} k_2 \left(r_i, z_{j+\frac{1}{2}} \right)}{h_z} \\ g_m &= h_r h_z \frac{r_{i+\frac{1}{2}}}{4} f_{i,j} \end{aligned}$$

3. $i = N_r; j = 1, 2, \dots, N_z - 1$

$$-\left[-h_z R \left(\chi_2 u_{N,j} - \varphi_2(z_j) \right) - h_z r_{N-\frac{1}{2}} k_1 \left(r_{N-\frac{1}{2}}, z_j \right) \frac{u_{N,j} - u_{N-1,j}}{h_r} + \frac{h_r}{2} R k_2 \left(R, z_{j+\frac{1}{2}} \right) \frac{u_{N,j+1} - u_{N,j}}{h_z} - \frac{h_r}{2} R k_2 \left(R, z_{j-\frac{1}{2}} \right) \frac{u_{N,j} - u_{N,j-1}}{h_z} \right] = \frac{h_r}{2} R h_z f_{N,j} \quad \text{при } i = N_r; j = 1, 2, \dots, N_z - 1 \quad \dots (2)$$

$$\begin{aligned}
a_m &= \frac{\frac{h_r}{2} R k_2 \left(R, z_{j-\frac{1}{2}} \right)}{h_z} \\
b_m &= - \frac{h_z r_{N-\frac{1}{2}} k_1 \left(r_{N-\frac{1}{2}}, z_j \right)}{h_r} \\
c_m &= h_z R \chi_2 + \frac{h_z r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, z_j \right)}{h_r} + \frac{h_r r_i k_2 \left(r_i, z_{j+\frac{1}{2}} \right)}{h_z} + \frac{h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\
d_m &= 0 \\
e_m &= \frac{\frac{h_r}{2} R k_2 \left(R, z_{j+\frac{1}{2}} \right)}{h_z} \\
g_m &= \frac{h_r}{2} R h_z f_{N,j} + h_z R \varphi_2(z_j)
\end{aligned}$$

4. $i = 0, \dots, N_r$; $j = 0$

$$u_{i,0} = \varphi_3(0) \text{ при } i = 0, \dots, N_r; j = 0 \dots (3)$$

$$\begin{aligned}
a_m &= \\
b_m &= \\
c_m &= 1 \\
d_m &= \\
e_m &= \\
g_m &= \varphi_3(0)
\end{aligned}$$

5. $i = 1, 2, \dots, N_r$; $j = N_z$

$$\begin{aligned}
& - \left[\frac{h_z}{2} r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, L \right) \frac{u_{i+1,N} - u_{i,N}}{h_r} - \frac{h_z}{2} r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, L \right) \frac{u_{i,N} - u_{i-1,N}}{h_r} - h_r r_i \left(\chi_4 u_{i,N} - \varphi_4(r_i) \right) \right. \\
& \left. - h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right) \frac{u_{i,N} - u_{i,N-1}}{h_z} \right] = \frac{r_i h_r h_z f_{i,N}}{2} \text{ при } i = 1, 2, \dots, N_r; j = N_z \dots (4)
\end{aligned}$$

$$\begin{aligned}
a_m &= \frac{h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\
b_m &= \frac{\frac{h_z}{2} r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, L \right)}{h_r} \\
c_m &= \frac{h_z r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, z_j \right)}{h_r} + \frac{h_z r_{i-\frac{1}{2}} k_1 \left(r_{i-\frac{1}{2}}, z_j \right)}{h_r} + h_r r_i \chi_4 + \frac{h_r r_i k_2 \left(r_i, z_{j-\frac{1}{2}} \right)}{h_z} \\
d_m &= \frac{\frac{h_z}{2} r_{i+\frac{1}{2}} k_1 \left(r_{i+\frac{1}{2}}, L \right)}{h_r} \\
e_m &= 0 \\
g_m &= \frac{r_i h_r h_z f_{i,N}}{2} + h_r r_i \varphi_4(r_i)
\end{aligned}$$