

Example: GHIP

K_h

$u_h = f_h$

	1	2	3	4	5	6	7	...	17	18	19	20	21
1								...					
2								...					
3								...					
4								...					
5								...					
6								...					
7								...					
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
17								...					
18								...					
19								...					
20								...					
21								...					

$r: \alpha \leftrightarrow i$

$i: x_1^{(i)}, x_2^{(i)}$

$\sum_{j \in \mathcal{I}_h = \{18, 19, 20, 21\}} K_{ij} g_j(x^{(i)})$

$r = \begin{matrix} 1 & 2 & 3 & \dots & 24 \in \mathbb{R}_h \end{matrix}$

$K^{(r)} = \begin{matrix} 1 & 2 & 3 \\ \begin{bmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{bmatrix} & \begin{bmatrix} \otimes & \otimes & \otimes \\ \otimes & \otimes & \otimes \\ \otimes & \otimes & \circ \end{bmatrix} & \begin{bmatrix} \\ \\ \end{bmatrix} & \dots & \begin{bmatrix} \\ \\ \end{bmatrix} \end{matrix}$

$f^{(r)} = \begin{matrix} 1 & 2 & 3 \\ \begin{bmatrix} \times \\ \times \\ \times \end{bmatrix} & \begin{bmatrix} \circ \\ \circ \\ \circ \end{bmatrix} & \begin{bmatrix} \\ \\ \end{bmatrix} & \dots & \begin{bmatrix} \\ \\ \end{bmatrix} \end{matrix}$

Taking into account the BC: 2nd Kind : 2 homog. ($\rightarrow f_h$)
 3rd Kind : 1-2, 2-3, 3-4, 4-5 $\rightarrow K_h$
 1st Kind: —