$$h : \{1, \ldots, N\} \longrightarrow \{11, \ldots, 1n, \ldots, m1 \ldots, mn\} \text{ tal que } 1n, \ldots, mn \notin \mathrm{Im}(h)$$

$$H : \mathbb{F}_q^N \longrightarrow \mathbb{F}_q^{mn} \text{ tal que } x_j = H(\underline{x})_{h(j)}$$

$$\tilde{L}_1 = (L_{11}, \ldots, L_{1n}), \quad L_{1i} : \mathbb{F}_q^n \to \mathbb{F}_q^n$$
$$L_{1i}(\underline{x}_i) = \underline{x}_i A_{1i} \quad A_{1i} \in \mathrm{M}_{n\times n}(\mathbb{F}_q), \quad \det A_{1i} \neq 0$$

$$\tilde{\pi}_1 = (\pi_1, \overset{m}{\ldots}, \pi_1), \quad \pi_1 : \mathbb{F}_q^n \to \mathbb{F}_{q^n}, \quad \pi_1(u_1, \ldots, u_n) = \alpha_1 u_1 + \cdots + \alpha_n u_n$$

$$\tilde{\pi}_2 = (\pi_2, \overset{n}{\ldots}, \pi_2), \quad \pi_2 : \mathbb{F}_q^m \to \mathbb{F}_{q^m}, \quad \pi_1(u_1, \ldots, u_m) = \alpha_1 u_1 + \cdots + \alpha_m u_m$$

$$\begin{array}{c} \underline{x}_1 \\ \vdots \\ \underline{x}_n \\ \vdots \\ \underline{x}_m \end{array} \begin{pmatrix} x_{11} & \ldots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{n1} & \ldots & x_{nn} \\ \vdots & \ddots & \vdots \\ x_{m1} & \ldots & x_{mn} \end{pmatrix} \xrightarrow{M} \begin{array}{c} \underline{x}'_1 \\ \vdots \\ \underline{x}'_m \end{array} \begin{pmatrix} x_{11} & \ldots & x_{1n} & x_{n+1,1} & \ldots & x_{m,1} \\ \vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\ x_{n1} & \ldots & x_{nn} & x_{n+1,n} & \ldots & x_{mn} \end{pmatrix}$$