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

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

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

$$\tilde{\pi}_1=(\pi_1,\overset{m}{\dots},\pi_1),\quad \pi_1:\mathbb{F}_q^n\to\mathbb{F}_{q^n},\quad \pi_1(u_1,\dots,u_n)=\alpha_1u_1+\cdots+\alpha_nu_n$$

$$\tilde{\pi}_2=(\pi_2,\overset{n}{\dots},\pi_2),\quad \pi_2:\mathbb{F}_q^m\to\mathbb{F}_{q^m},\quad \pi_1(v_1,\dots,v_m)=\beta_1v_1+\cdots+\beta_mv_m$$

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