

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

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

$$\begin{array}{l} \tilde{L}_1=(L_{11},\ldots,L_{1n}),\quad L_{1i}:\mathbb{F}_q^n\rightarrow\mathbb{F}_q^n\\ L_{1i}(\underline{x}_i)=\underline{x}_iA_{1i}\quad A_{1i}\in\text{M}_{n\times n}(\mathbb{F}_q),\quad \det A_{1i}\neq 0 \end{array}$$

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

$$\tilde{\pi}_2=(\pi_2,\cdot^n\cdot,\pi_2),\quad \pi_2:\mathbb{F}_q^m\rightarrow\mathbb{F}_{q^m},\quad \pi_1(u_1,\ldots,u_m)=\alpha_1u_1+\cdots+\alpha_mu_m$$

$$\begin{array}{c} \underline{x}_1 \\ \vdots \\ \underline{x}_m \end{array} \left( \begin{array}{ccc} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mn} \end{array} \right) \xrightarrow{M} \begin{array}{c} \underline{x}'_1 \\ \vdots \\ \underline{x}'_m \end{array} \left( \begin{array}{cccccc} x_{11} & \cdots & x_{1n} & x_{n+1,1} & \cdots & x_{m,1} \\ \vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\ x_{n1} & \cdots & x_{nn} & x_{n,n+1} & \cdots & x_{mn} \end{array} \right)$$