

PY, QY

$$(AA^T)$$

$$\text{Cov}(PY, QY) =$$

$$E[\cancel{Q^T P} Q Y] \\ P^T E[P Y Y^T Q^T]$$

$$\cancel{Y}^T A Y^T$$

$$AY = 0$$

$$Y^T G$$

$$\boxed{g_i \sim N(0, \sigma^2 I)} \mid \cancel{\text{Cov}(AG, Y^T)}$$

$n \times D$

$$Y \in \mathbb{R}^n$$

$$\begin{pmatrix} \end{pmatrix}$$

$$A \in n \times n \quad n \times D$$

$$Y = n \times 1$$

$$Y$$

$$AG \quad Y^T G$$

$$\cancel{Y}^T A$$

$$AY = 0 \rightarrow Y^T A^T = 0$$

$$= Y^T A \Rightarrow A^T Y = 0$$

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