

$$\sum_{n=1}^N \lambda_n x_n^T x_n - 2 \sum_{n=1}^N \sum_{m=1}^N \lambda_n \lambda_m x_n^T x_m + \sum_{n=1}^N \lambda_n \left( \sum_{m=1}^N \lambda_m x_m \right)^2 = \sum_{n=1}^N \lambda_n x_n^T x_n - 2 \sum_{n=1}^N \sum_{m=1}^N \lambda_n \lambda_m x_n^T x_m + \left( \sum_{m=1}^N \lambda_m x_m \right)^2$$