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