1 Introduction

Consider the following regression model for $i = 1, \dots, n$:

$$\begin{gathered} y_i = f(x_i) + \epsilon_i \\ (\epsilon_1, \dots, \epsilon_n)^\top \sim \mathrm{N}_n(0, \Psi^{-1}) \end{gathered} \tag{1}$$

where $y_i \in \mathbb{R}$, $x \in \mathcal{X}$, and $f \in \mathcal{F}$. The set $\mathcal{X}$ can be unidimensional, multidimensional, or even represent functional covariates.

Let $\mathcal{F}$ be a reproducing kernel Hilbert space (RKHS) with kernel $h_\lambda : \mathcal{X} \times \mathcal{X} \to \mathbb{R}$. The Fisher information for f is given by

$$\mathcal{I}\big(f(x), f(x')\big) = \sum_{k=1}^{n} \sum_{l=1}^{n} \Psi_{k,l} h_\lambda(x, x_k) h_\lambda(x', x_l). \tag{2}$$