Chapter 15. Gaussian processes

15.1.

$$\langle \kappa(\mathbf{x}_1, \cdot), \kappa(\mathbf{x}_2, \cdot) \rangle_{\mathcal{H}} = \langle \sum_{i=1}^{\infty} \lambda_i \phi_i(\mathbf{x}_1), \sum_{i=1}^{\infty} \lambda_i \phi_i(\mathbf{x}_2) \rangle_{\mathcal{H}}$$

$$= \sum_{i=1}^{\infty} \frac{\lambda_i \phi_i(\mathbf{x}_1) \lambda_i \phi_i(\mathbf{x}_2)}{\lambda_i} = \sum_{i=1}^{\infty} \lambda_i \phi_i(\mathbf{x}_1) \phi_i(\mathbf{x}_2) = \kappa(\mathbf{x}_1, \mathbf{x}_2).$$