Notation

Unbolded x represents a single number, while boldface $\mathbf{x}$ represents a vector, and capital boldface $\mathbf{X}$ represents a matrix. An individual element of a vector is denoted with a subscript and without boldface. For example, the ith element of a vector $\mathbf{x}$ is x_i. A bold lower-case letter with an index such as $\mathbf{x}_j$ represents a particular row of matrix $\mathbf{X}$.

Symbol	Description
SE	The squared-exponential kernel, also known as the radial-basis function (RBF) kernel, the Gaussian kernel, or the exponentiated quadratic.
RQ	The rational-quadratic kernel.
Per	The periodic kernel.
Lin	The linear kernel.
WN	The white-noise kernel.
C	The constant kernel.
$\boldsymbol{\sigma}$	The changepoint kernel, $\boldsymbol{\sigma}(x, x') = \sigma(x)\sigma(x')$, where $\sigma(x)$ is a sigmoidal function such as the logistic function.
$k_a + k_b$	Addition of kernels, shorthand for $k_a(\mathbf{x}, \mathbf{x}') + k_b(\mathbf{x}, \mathbf{x}')$
$k_a \times k_b$	Multiplication of kernels, shorthand for $k_a(\mathbf{x}, \mathbf{x}') \times k_b(\mathbf{x}, \mathbf{x}')$
$k(\mathbf{X}, \mathbf{X})$	The Gram matrix, whose i, jth element is $k(\mathbf{x}_i, \mathbf{x}_j)$.
$\mathbf{K}$	Shorthand for the Gram matrix $k(\mathbf{X}, \mathbf{X})$
$\boldsymbol{f}(\mathbf{X})$	A vector of function values, whose ith element is given by $f(\mathbf{x}_i)$.
$\text{mod}(i, j)$	The modulo operator, giving the remainder after dividing i by j.
$\mathcal{O}(\cdot)$	The big-O asymptotic complexity of an algorithm.

Exact definitions of all kernels listed here are given in appendix **??**.