

$$\boldsymbol{\mu} = \begin{pmatrix} \mu(x_1^{\text{obs}}) \\ \vdots \\ \mu(x_{N_{\text{obs}}}^{\text{obs}}) \\ \mu(x_1^{\text{pred}}) \\ \vdots \\ \mu(x_{N_{\text{pred}}}^{\text{pred}}) \end{pmatrix}$$

$$\mathbf{K} = \begin{pmatrix} k(x_1^{\text{obs}}, x_1^{\text{obs}}) & \cdots & k(x_1^{\text{obs}}, x_{N_{\text{obs}}}^{\text{obs}}) & k(x_1^{\text{obs}}, x_1^{\text{pred}}) & \cdots & k(x_1^{\text{obs}}, x_{N_{\text{pred}}}^{\text{pred}}) \\ \vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\ k(x_{N_{\text{obs}}}^{\text{obs}}, x_1^{\text{obs}}) & \cdots & k(x_{N_{\text{obs}}}^{\text{obs}}, x_{N_{\text{obs}}}^{\text{obs}}) & k(x_{N_{\text{obs}}}^{\text{obs}}, x_1^{\text{pred}}) & \cdots & k(x_{N_{\text{obs}}}^{\text{obs}}, x_{N_{\text{pred}}}^{\text{pred}}) \\ k(x_1^{\text{pred}}, x_1^{\text{obs}}) & \cdots & k(x_1^{\text{pred}}, x_{N_{\text{obs}}}^{\text{obs}}) & k(x_1^{\text{pred}}, x_1^{\text{pred}}) & \cdots & k(x_1^{\text{pred}}, x_{N_{\text{pred}}}^{\text{pred}}) \\ \vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\ k(x_{N_{\text{pred}}}^{\text{pred}}, x_1^{\text{obs}}) & \cdots & k(x_{N_{\text{pred}}}^{\text{pred}}, x_{N_{\text{obs}}}^{\text{obs}}) & k(x_{N_{\text{pred}}}^{\text{pred}}, x_1^{\text{pred}}) & \cdots & k(x_{N_{\text{pred}}}^{\text{pred}}, x_{N_{\text{pred}}}^{\text{pred}}) \end{pmatrix}$$

$$\boldsymbol{\mu}_{\text{obs}} \begin{pmatrix} \mu(x_1^{\text{obs}}) \\ \vdots \\ \mu(x_{N_{\text{obs}}}^{\text{obs}}) \end{pmatrix}$$

$$\begin{pmatrix} \mu(x_1^{\text{pred}}) \\ \vdots \\ \mu(x_{N_{\text{pred}}}^{\text{pred}}) \end{pmatrix} \boldsymbol{\mu}_{\text{pred}}$$

$$\mathbf{K}_{\text{obs}} \begin{pmatrix} k(x_1^{\text{obs}}, x_1^{\text{obs}}) & \cdots & k(x_1^{\text{obs}}, x_{N_{\text{obs}}}^{\text{obs}}) \\ \vdots & \ddots & \vdots \\ k(x_{N_{\text{obs}}}^{\text{obs}}, x_1^{\text{obs}}) & \cdots & k(x_{N_{\text{obs}}}^{\text{obs}}, x_{N_{\text{obs}}}^{\text{obs}}) \end{pmatrix}$$

$$\begin{pmatrix} k(x_1^{\text{pred}}, x_1^{\text{obs}}) & \cdots & k(x_1^{\text{pred}}, x_{N_{\text{obs}}}^{\text{obs}}) \\ \vdots & \ddots & \vdots \\ k(x_{N_{\text{pred}}}^{\text{pred}}, x_1^{\text{obs}}) & \cdots & k(x_{N_{\text{pred}}}^{\text{pred}}, x_{N_{\text{obs}}}^{\text{obs}}) \end{pmatrix} \mathbf{K}_{\text{mix}}^T$$

$$\mathbf{K}_{\text{mix}} \begin{pmatrix} k(x_1^{\text{obs}}, x_1^{\text{pred}}) & \cdots & k(x_1^{\text{obs}}, x_{N_{\text{pred}}}^{\text{pred}}) \\ \vdots & \ddots & \vdots \\ k(x_{N_{\text{obs}}}^{\text{obs}}, x_1^{\text{pred}}) & \cdots & k(x_{N_{\text{obs}}}^{\text{obs}}, x_{N_{\text{pred}}}^{\text{pred}}) \end{pmatrix}$$

$$\begin{pmatrix} k(x_1^{\text{pred}}, x_1^{\text{pred}}) & \cdots & k(x_1^{\text{pred}}, x_{N_{\text{pred}}}^{\text{pred}}) \\ \vdots & \ddots & \vdots \\ k(x_{N_{\text{pred}}}^{\text{pred}}, x_1^{\text{pred}}) & \cdots & k(x_{N_{\text{pred}}}^{\text{pred}}, x_{N_{\text{pred}}}^{\text{pred}}) \end{pmatrix} \mathbf{K}_{\text{pred}}$$