$$
\begin{aligned}
\mathrm{d}\boldsymbol{x} &= (v\boldsymbol{n} - \lambda^2 \nabla_{\boldsymbol{x}} U)\mathrm{d}t + \boldsymbol{\sigma}_T \cdot \mathrm{d}\boldsymbol{\xi} \\
\mathrm{d}\boldsymbol{n} &= -[(\boldsymbol{I} - \boldsymbol{n}\boldsymbol{n}) \cdot \nabla_{\boldsymbol{n}} U + \kappa_d D_R \boldsymbol{n}]\mathrm{d}t + \boldsymbol{\sigma}_R \cdot \mathrm{d}\boldsymbol{\zeta}
\end{aligned}
$$