Generalized Langevin Equation analytics

- **Drift matrix $\mathbf{A}_p$:**

$$
\left(
\begin{array}{ccccccccc}
1.2576{\times}10^{-08} & -2.7468{\times}10^{-03} & 3.2675{\times}10^{-01} & -2.0925{\times}10^{-03} & 1.5332{\times}10^{-02} & 3.0512{\times}10^{-02} & -1.2942{\times}10^{-03} & 6.8379{\times}10^{-03} & 9.79 \\
2.7468{\times}10^{-03} & 9.2913{\times}10^{-09} & 5.9733{\times}10^{-03} & -8.0919{\times}10^{-04} & 1.2409{\times}10^{-03} & -5.9721{\times}10^{-03} & -2.5388{\times}10^{-04} & -2.5743{\times}10^{-03} & -4.66 \\
-3.2675{\times}10^{-01} & -5.9733{\times}10^{-03} & 6.4327{\times}10^{-08} & 5.9764{\times}10^{-02} & 1.5058{\times}10^{-01} & 4.3765{\times}10^{-02} & -3.8888{\times}10^{-03} & 5.9515{\times}10^{-01} & -2.73 \\
2.0925{\times}10^{-03} & 8.0919{\times}10^{-04} & -5.9764{\times}10^{-02} & 5.0400{\times}10^{-07} & 9.7527{\times}10^{-04} & -3.0306{\times}10^{-02} & -1.4358{\times}10^{-04} & -2.2934{\times}10^{-03} & -5.66 \\
-1.5331{\times}10^{-02} & -1.2409{\times}10^{-03} & -1.5058{\times}10^{-01} & -9.7527{\times}10^{-04} & 3.7265{\times}10^{-05} & 8.8469{\times}10^{-02} & 3.9510{\times}10^{-04} & 4.3662{\times}10^{-02} & 3.19 \\
-3.0512{\times}10^{-02} & 5.9721{\times}10^{-03} & -4.3765{\times}10^{-02} & 3.0306{\times}10^{-02} & -8.8469{\times}10^{-02} & 9.6524{\times}10^{-06} & 9.8123{\times}10^{-03} & -9.4851{\times}10^{-02} & -3.10 \\
1.2942{\times}10^{-03} & 2.5388{\times}10^{-04} & 3.8888{\times}10^{-03} & 1.4358{\times}10^{-04} & -3.9510{\times}10^{-04} & -9.8123{\times}10^{-03} & 5.1133{\times}10^{-05} & -2.8819{\times}10^{-03} & 5.02 \\
-6.8377{\times}10^{-03} & 2.5743{\times}10^{-03} & -5.9515{\times}10^{-01} & 2.2934{\times}10^{-03} & -4.3662{\times}10^{-02} & 9.4851{\times}10^{-02} & 2.8819{\times}10^{-03} & 8.0436{\times}10^{-05} & 4.92 \\
-1.1822{\times}10^{-03} & 4.6655{\times}10^{-03} & 2.7379{\times}10^{-02} & 5.6664{\times}10^{-02} & -3.1990{\times}10^{-01} & 3.1001{\times}10^{-01} & -5.0268{\times}10^{-03} & -4.9231{\times}10^{-01} & 8.64
\end{array}
\right.
$$

- **Fluctuation-Dissipation theorem is enforced, $\mathbf{C}_p = k_B T$**

- **Memory kernel FT, $K(\omega)/K(0) = H(\omega)/H(0)$**
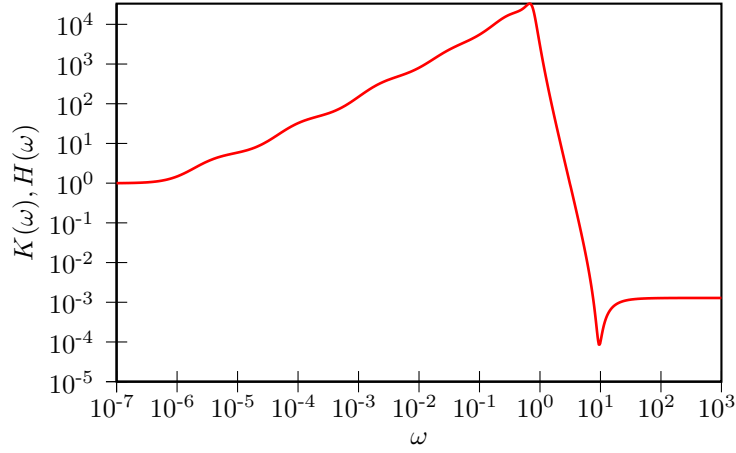
- **Sampling efficiency, for q^2 and $p^2 + \omega^2 q^2$:**
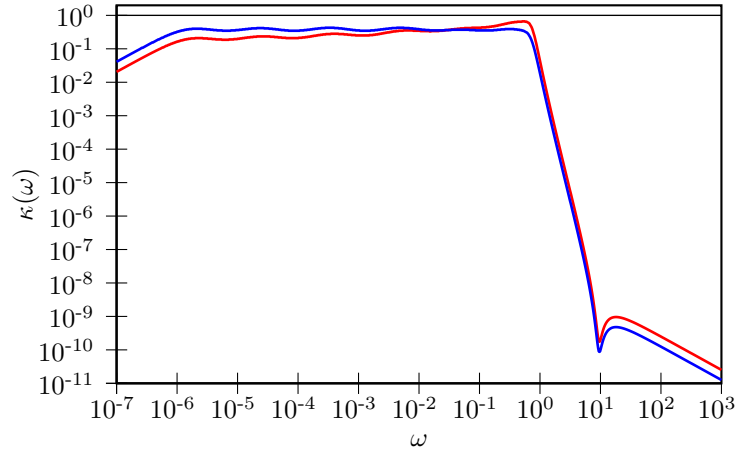
- **Free-particle diffusion coeff.** $(mD/k_B T)$: $1.0264 \times 10^{+05}$