



Figure S3. Time evolution of $\sigma^{32}(S_t)$ for a reduced qualitative model of the heat shock response (**Table S1**). Heat shock occurs at 10 min with an altered rate constant for denaturing proteins and translation for σ^{32} . $K(T)$ is changed from 20 min^{-1} at low temperature to 60 min^{-1} at high temperature, while $\eta(T)$ is changed from $7.5 \times 10^{-8} \text{ M min}^{-1}$ at low temperature to 4×75.0 at high temperature. The other parameters are $\alpha_d = 0.09 \text{ min}^{-1}$, $\alpha_0 = 0.09 \text{ min}^{-1}$, $K_{fold} = 5000 \text{ min}^{-1}$, $K_u = 1.0 \times 10^{10} \text{ M}^{-1}$, $P_t = 1.0 \times 10^{-5} \text{ M}$, $K_s = 1.0 \times 10^{10} \text{ M}^{-1}$, $K_d = 0.75 \text{ min}^{-1}$, $\alpha_s = 1.2 \text{ min}^{-1}$. The reduced order heat shock equations successfully reproduce the qualitative dynamic behavior of the heat shock response.