S1 Alternative method for determining kinetic parameters

In the diffusion-less case, in addition to fitting the Glass equations to velocity data (Eq. 13), the kinetic parameters R and λ can also be determined by fitting Glass equation solutions (Eq. 5) to the concentration time series data. We identify time intervals during which all y are either positive or negative so that

$$x_m(t_k) = \begin{cases} x_m(t_0)e^{-\lambda\Delta t_k} + \frac{R}{\lambda}(1 - e^{-\lambda\Delta t_k}) & \text{if } y_m(t_k) = +1 \quad \forall k, \\ x_m(t_0)e^{-\lambda\Delta t_k} & \text{if } y_m(t_k) = -1 \quad \forall k, \end{cases} \tag{S1}$$

where m and k index the time intervals and the time points lying inside a particular interval respectively. Within a particular interval, $x_m(t_k)$ is the concentration at the kth time point, $x_m(t_0)$ is the initial concentration, and $\Delta t_k = t_k - t_0$ is the time elapsed from the start of the interval. Equations S1 are $P \gg 2$ non-linear equations with two unknowns, R and λ, and can be fit relatively easily using off-the-shelf non-linear optimization methods. We used MATLAB's `lsqnonlin` function that implements a Trust-Region algorithm. This is implemented as the "`conc`" method of FIGR.