

Observation: Of course the white noise approximation doesn't work! The fluctuations are *red*!

Q: How do we treat *red noise* systems?

A: Increase dimensionality of the problem. That is, let

$$d\eta = -(1/\tau_d) \eta dt + \eta_o \sqrt{(2/\tau_d)} dW$$

since this model reproduces the spectrum of η (amplitude of the Wiener process comes from the Fluctuation-Dissipation relation), and augment the vector Ψ with the components of η .