

First moment of the Fokker-Planck equation:

$$\langle \Psi \rangle = (\mathbf{L} + \tau_d \eta_o^2 \mathbf{A}^2)^{-1} \mathbf{S}_{ext}.$$

Case 1:

Effective damping is

$$-r_o - |\text{const}| [2m - mn(n+1)]^2 / [n(n+1)]^2$$

Case 2:

Effective damping is

$$-r_o + |\text{const}|$$