

$$P_{\text{eff}}(t) = S_{\text{eff}}(t) + \frac{1}{2} \left(\frac{dS_{\text{eff}}(t)}{dt} \right)^2 + \frac{1}{6} \left(\frac{d^2 S_{\text{eff}}(t)}{dt^2} \right)^2 + \frac{1}{24} \left(\frac{d^3 S_{\text{eff}}(t)}{dt^3} \right)^2 + \dots$$