Part I
Quantum Dot Laser

Table of Symbols

Table I.1 List of corresponding quantities in the three different coordinate systems used in Part I, which are characterized by different scalings of time

Meaning	Physical time t	Time $t' \equiv 2\kappa t$	Time $s \equiv 2\sqrt{\kappa \bar{W} N_{ph}^0}\, t$
Injection/feedback strength	K	$\tilde{k}$, $\tilde{k}_1$	k
Of saddle-node bifurcation	–	–	k^{sn}
Of Hopf bifurcation	K_H, K_H^{QD}, K_H^{QW}	$\tilde{k}_H$	k_H
Of zero-Hopf points	$K^{ZH,1}$, $K^{ZH,2}$	$\tilde{k}^{ZH}$, $\tilde{k}^{ZH,1}$	–
Of critical Hopf point	$K_{H,c}$	$\tilde{k}_{H,c}$	–
Frequency detuning	$\Delta\nu_{inj}$, $\Delta\omega_{inj}$	$\delta\omega$, $\delta\omega^s$	Δ, Δ_1
Of saddle-node bifurcation	–	$\delta\omega_{\pm}^{sn}$, $\delta\omega_{\pm}^{s,sn}$	$\Delta_{\pm}^{sn}$, $\Delta_{1,\pm}^{sn}$
Of Hopf bifurcation	–	$\delta\omega_H$	Δ_H
Of zero-Hopf point	$\Delta\nu_{inj}^{ZH,1}$	$\delta\omega^{ZH,1}$	–
Of critical Hopf point	$\Delta\nu_{inj}^{H,c}$	$\delta\omega_{H,c}$	–
Inversion	–	ρ_{inv}, $\rho_{inv,1}$, ρ_{inv}^s	u_+, U_+, $\frac{u_e}{2}$, $\frac{U_e}{2}$
Of saddle-node bifurcation	–	ρ_{inv}^{sn}, $\rho_{inv,\pm}^{s,sn}$	$\left(\frac{u_e}{2}\right)^{sn}$
Eigenvalues	$\tilde{\sigma}$	σ	λ
RO frequency	ω_{RO}, ω_{RO}^{ref}, ω_{RO}^{S}, ω_{RO}^{vf}, ω_{RO}^{QW}	ω^{RO}, ω^{ref}, ω^{S}, $\omega_{1/2}$, ω^{vf}, $\omega_{1/2}^{vf}$, ω^{QW}	ω_s^{ref}, ω_s^S
RO damping	Γ_{RO}, Γ_{RO}^{ref}, Γ_{RO}^{S}, Γ_{RO}^{vf}, Γ_{RO}^{QW}, $\Gamma_{RO}^{S,QW}$	Γ^{RO}, Γ^{ref}, Γ^{S}, Γ_1, Γ^{vf}, Γ_1^{vf}, Γ^{QW}, $\Gamma^{S,QW}$	Γ_1^{ref}, Γ_1^S
Hopf frequency	$\omega_{H,t}^{ref}$, $\omega_{H,t}^{S}$, $\omega_{H,t}^{vf}$	ω_H, ω_H^{ref}, ω_H^S, ω_H^{vf}	$\omega_{H,s}$, $\omega_{H,s}^{ref}$, $\omega_{H,s}^S$

First column physical time t, *second column* dimensionless time $t \equiv 2\kappa\tau_{in}$ that is rescaled with respect to the photon lifetime $(2\kappa)^{-1}$, and *third column* dimensionless time $s \equiv 2\sqrt{\kappa \bar{W} N_{ph}^0}\, t$