Tabelle 2: Verhalten der wichtigsten Regelkreisübertragungselemente

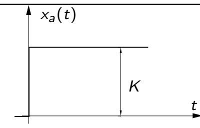
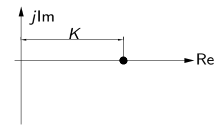
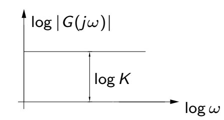
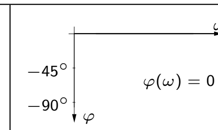
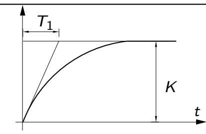
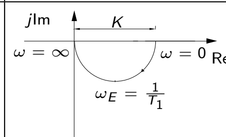
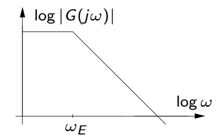
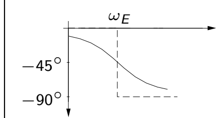
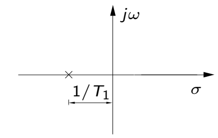
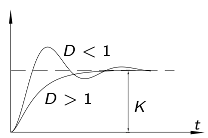
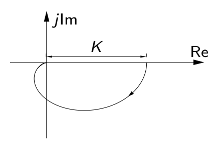
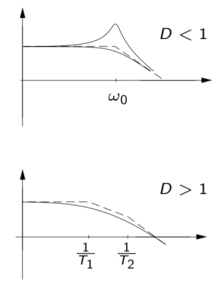
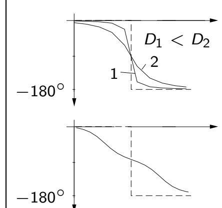
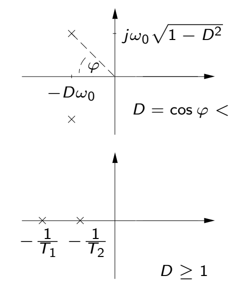
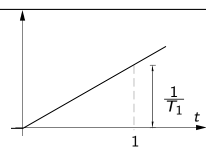
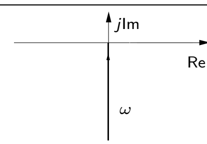
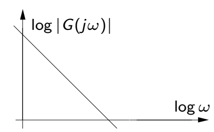
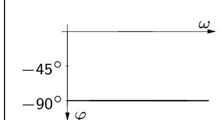
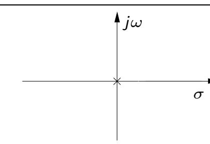
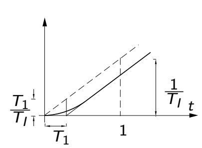
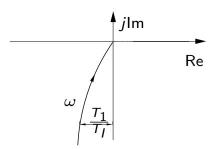
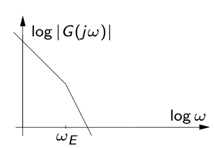
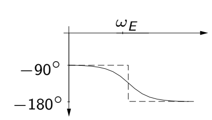
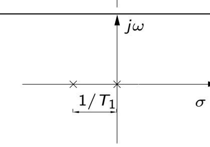
System	Zeitbereich Bildbereich	Übergangsfunktion	Ortskurve	Bode–Diagramm (Amplitudengang)	 (Phasengang)	s–Ebene × Pol ◯ Nullstelle
P	$x_a(t) = K\,x_e(t)$ $G(s) = K$					
PT_1	$T_1\,\dot{x}_a(t) + x_a(t) = K\,x_e(t)$ $G(s) = K\dfrac{1}{1 + T_1\,s}$					
PT_2	$\frac{1}{\omega_0^2}\ddot{x}_a(t) + \frac{2\,D}{\omega_0}\dot{x}_a(t) + x_a(t) = K\,x_e(t)$ $G(s) = K\dfrac{1}{\frac{1}{\omega_0^2}s^2 + \frac{2\,D}{\omega_0}s + 1}$ $D < 1$: konjugiert komplexe Wurzeln der char. Gleichung $\lambda_{1,2} = -\omega_0(D \pm j\sqrt{1 - D^2})$ $D \geq 1$: reelle Wurzeln der char. Gleichung $\lambda_{1,2} = -\omega_0(D \pm j\sqrt{1 - D^2}) = -1/T_{1,2}$					
I	$x_a(t) = \dfrac{1}{T_I}\int x_e \mathrm{d}t$ $G(s) = \dfrac{1}{T_I\,s}$					
IT_1	$T_1\,\dot{x}_a(t) + x_a(t) = \dfrac{1}{T_I}\int x_e(t)\mathrm{d}t$ $G(s) = \dfrac{1}{T_I\,s(1 + T_1\,s)}$					

Tabelle 2: Fortsetzung

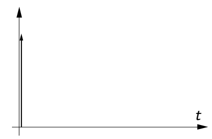
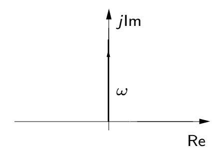
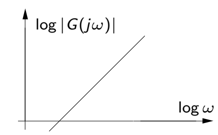
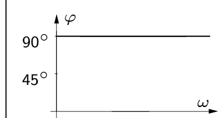
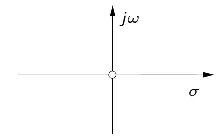
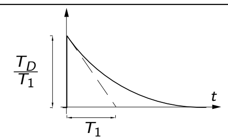
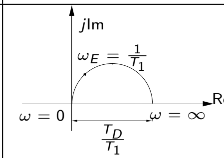
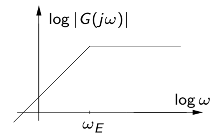
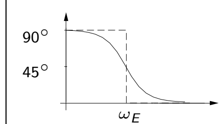
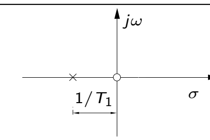
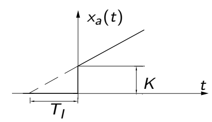
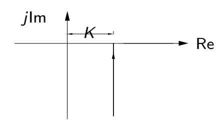
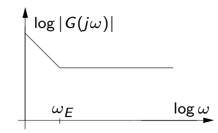
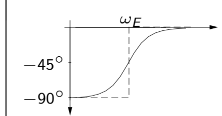
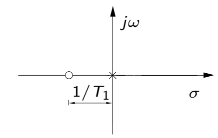
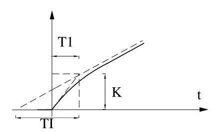
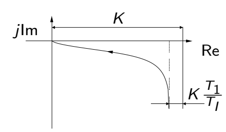
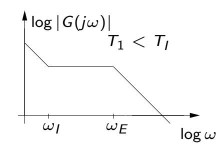
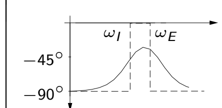
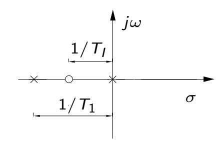
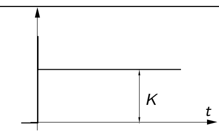
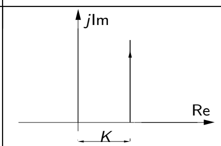
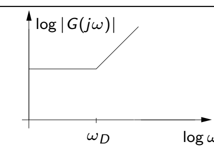
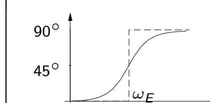
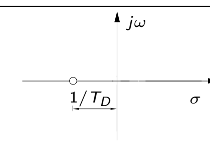
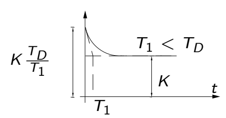
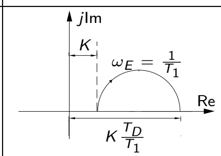
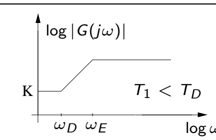
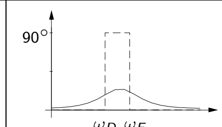
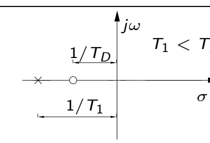
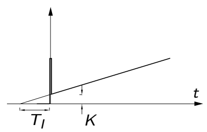
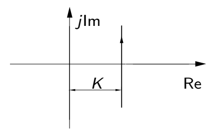
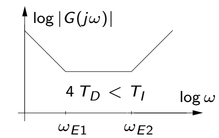
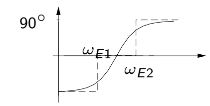
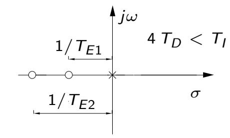
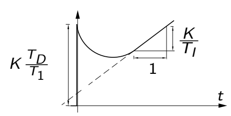
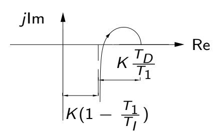
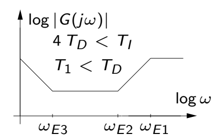
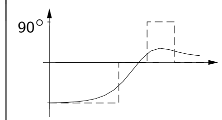
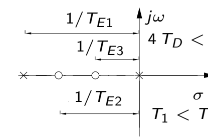
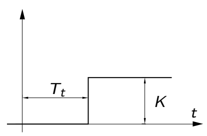
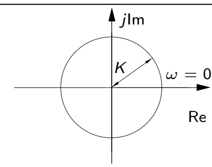
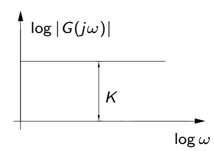
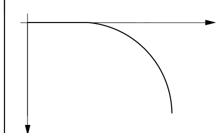
System	Zeitbereich Bildbereich	Übergangsfunktion	Ortskurve	Bode–Diagramm (Amplitudengang)	 (Phasengang)	s–Ebene × Pol ◯ Nullstelle
D	$x_a(t) = T_D \frac{\mathrm{d}x_e}{\mathrm{d}t}$ $G(s) = T_D\, s$					
DT_1	$T_1\dot{x}_a(t) + x_a(t) = T_D \frac{\mathrm{d}x_e}{\mathrm{d}t}$ $G(s) = T_D \frac{s}{1 + T_1\, s}$					
PI	$x_a(t) =$ $K\left[x_e(t) + \frac{1}{T_I}\int x_e(t)\mathrm{d}t\right]$ $G(s) = K\left[1 + \frac{1}{T_I\, s}\right]$					
PIT_1	$T_1\, \dot{x}_a(t) + x_a(t) =$ $K\left[x_e(t) + \frac{1}{T_I}\int x_e\mathrm{d}t\right]$ $G(s) = K\frac{1 + \frac{1}{T_I\, s}}{1 + T_1\, s}$					
PD	$x_a(t) = K\left[x_e(t) + T_D \frac{\mathrm{d}x_e}{\mathrm{d}t}\right]$ $G(s) = K\,[1 + T_d\, s]$					
PDT_1	$T_1\dot{x}_a(t) + x_a(t) =$ $K\left[x_e(t) + T_D \frac{\mathrm{d}x_e}{\mathrm{d}t}\right]$ $G(s) = K\frac{1 + T_D\, s}{1 + T_1\, s}$					

Tabelle 2: Fortsetzung

System	Zeitbereich Bildbereich	Übergangsfunktion	Ortskurve	Bode–Diagramm (Amplitudengang)	 (Phasengang)	s–Ebene $\times$ Pol $\bigcirc$ Nullstelle
PID	$x_a(t) =$ $K\left[x_e(t) + \frac{1}{T_I}\int x_e \mathrm{d}t + T_D \frac{\mathrm{d}x_e}{\mathrm{d}t}\right]$ $G(s) = K\left[1 + T_D\,s + \frac{1}{T_I\,s}\right]$					
$PIDT_1$	$T_1\dot{x}_a(t) + x_a(t) =$ $K\left[x_e(t) + \frac{1}{T_I}\int x_e \mathrm{d}t + T_D \frac{\mathrm{d}x_e}{\mathrm{d}t}\right]$ $G(s) = K\frac{1 + T_D\,s + \frac{1}{T_I\,s}}{1 + T_1\,s}$					
$(P)T_t$	$x_a(t) = K\,x_e(t - T_t)$ $G(s) = K\,e^{-s\,T_t}$ $K = 1$ für reines T_t-Element					Pole bei $-\infty$ Nullstellen bei $+\infty$