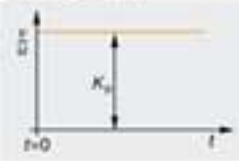
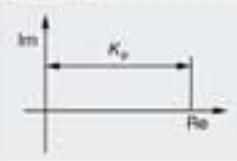
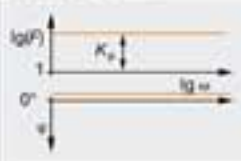
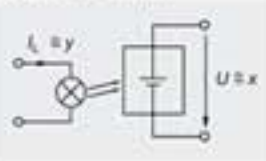
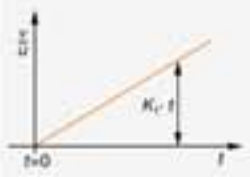
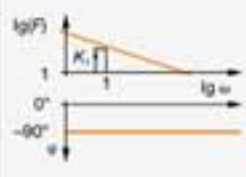
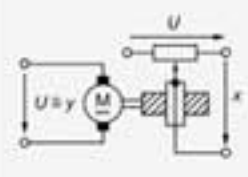
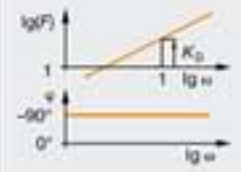
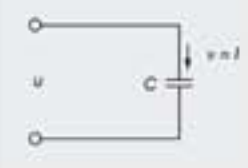
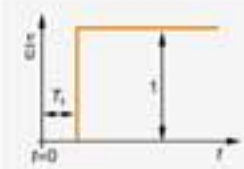
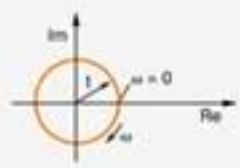
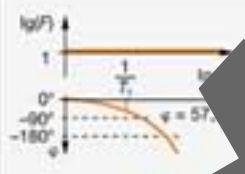
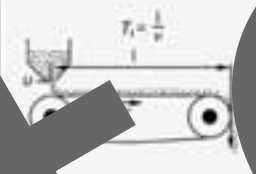
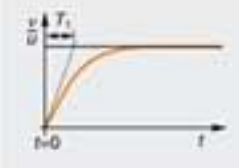
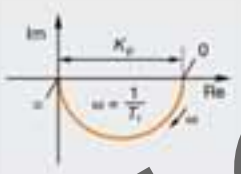
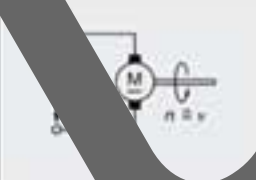
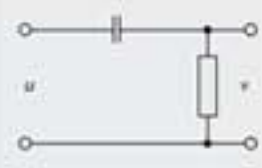
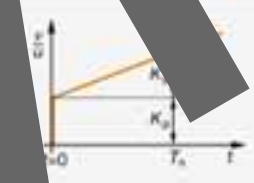
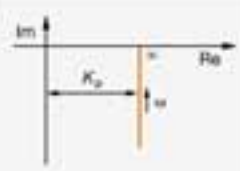
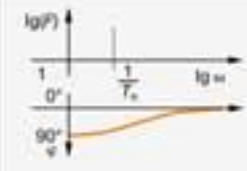
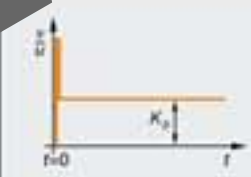
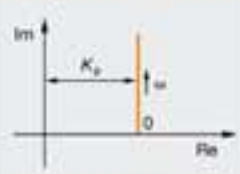
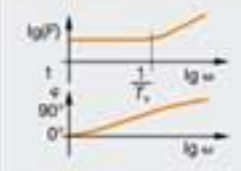
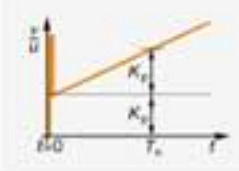
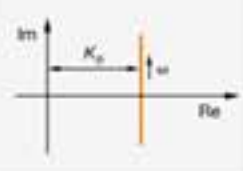
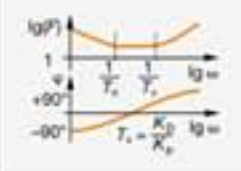
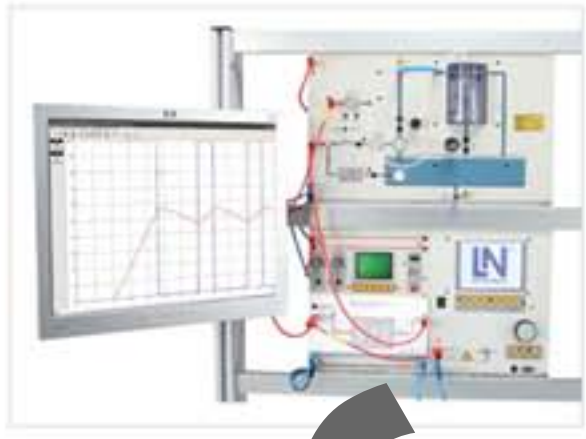
Experimentieren – Lernen – Verstehen

Regelungstechnik –
Zeitverhalten typischer Regelstrecken

Bezeich.	Frequ. u. Diff.-gleich.	Sprungantwort	Ortskurve	Bode-Diagramm	Typisches Beispiel
P	$F = K_p$ $v = K_p \cdot u$				
I	$F = \frac{K_I}{p}$ $v = K_I \int u\,dt$				
D	$F = K_D \cdot p$ $v = K_D \frac{du}{dt}$				
T_t	$F = e^{-p \cdot T_t}$ $v(t) = u(t - T_t)$				
P_{T1}	$F = \frac{K_p}{1 + T_1 p}$ $v + T_1 \frac{dv}{dt} = K_p u$				
P_{T2}	$F = \frac{K_p}{1 + T_1 \cdot p + T_2^2 \cdot p^2}$ $v + T_1 \frac{dv}{dt} + T_2^2 \frac{d^2v}{dt^2}$				
	$F = \frac{K_D \cdot p}{1 + T \cdot p}$ $v + T \frac{dv}{dt} = K_D \frac{du}{dt}$				
	$\left(1 + \frac{1}{p}\right)$ $v = K_p \left(u + \frac{1}{T_n}\right.$				
PD	$T \cdot p)$ $v = \left.T_v \frac{du}{dt}\right)$				
PID	$F = K_p \left(1 + \frac{1}{T_n \cdot p} + T_v p\right)$ $v = K_p \left(u + \frac{1}{T_n} \int u\,dt + T_v \frac{du}{dt}\right)$				



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