ANÁLISIS DE LA ECUACIÓN ASOCIADA A LOS CONTROLADORES PID

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	SISTEMAS DE CONTROL PARA INGENIERÍA; Nise, N.	SISTEMA DE CONTROL AUTOMÁTICO; Kuo, B.
PI	$G_c(s) = K_1 + \frac{K_2}{s} = \frac{K_1\left(s + \frac{K_2}{K_1}\right)}{s}$	$G_c(s) = K_P + \frac{K_I}{s}$
PD	$G_c(s) = K_2 s + K_1 = K_2\left(s + \frac{K_1}{K_2}\right)$	$G_c(s) = K_D s + K_P$
PID	$G_c(s) = K_1 + \frac{K_2}{s} + K_3 s = \frac{K_1 s + K_2 + K_3 s^2}{s} = \frac{K_3\left(s^2 + \frac{K_1}{K_3} s + \frac{K_2}{K_3}\right)}{s}$	$G_c(s) = K_P + \frac{K_I}{s} + K_D s$

	SISTEMAS DE CONTROL PARA INGENIERÍA; Nise, N.	INGENIERÍA DE CONTROL ; Bolton, W.
PI	$G_c(s) = K_1 + \frac{K_2}{s} = \frac{K_1\left(s + \frac{K_2}{K_1}\right)}{s}$	$G_c(s) = \frac{K_P\left(s + \frac{K_I}{K_P}\right)}{s} = \frac{K_P\left(s + \frac{1}{\tau_i}\right)}{s}; \tau_i = \frac{K_P}{K_I}$
PD	$G_c(s) = K_2 s + K_1 = K_2\left(s + \frac{K_1}{K_2}\right)$	$G_c(s) = K_D s + K_P = K_D\left(s + \frac{1}{\tau_d}\right); \tau_d = \frac{K_D}{K_P}$
PID	$G_c(s) = K_1 + \frac{K_2}{s} + K_3 s = \frac{K_1 s + K_2 + K_3 s^2}{s} = \frac{K_3\left(s^2 + \frac{K_1}{K_3}s + \frac{K_2}{K_3}\right)}{s}$	$G_c(s) = K_P\left(1 + \frac{K_I}{K_P s} + \frac{K_D s}{K_P}\right) = K_P\left(1 + \frac{1}{\tau_i s} + \tau_d s\right); \tau_i = \frac{K_P}{K_I}; \tau_d = \frac{K_D}{K_P}$

	EQUIVALENTES ENTRE LA ECUACIONES PROPUESTAS POR N. NISE VS W. BOLTON
PI	$K_1 = K_P; K_2 = K_I; \tau_i = \frac{K_P}{K_I}$
PD	$K_1 = K_P; K_2 = K_D; \tau_d = \frac{K_D}{K_P}$
PID	$K_1 = K_P; K_2 = K_I; K_3 = K_D \;\Big|\; \tau_i = \frac{K_1}{K_2}; \tau_d = \frac{K_3}{K_1} \;\Big|\; \tau_i = \frac{K_P}{K_I}; \tau_d = \frac{K_D}{K_P}$

BIBLIOGRAFÍA