Chart

Description automatically generated with low confidenceA picture containing graphical user interface

Description automatically generatedA picture containing text, orange

Description automatically generatedNature of second order system response

Undamped: roots

A picture containing text, clock

Description automatically generatedDiagram

Description automatically generated with low confidenceUnderdamped: roots

Text, letter

Description automatically generatedCritically damped: roots

Overdamped: roots

Text, letter

Description automatically generatedTable

Description automatically generatedwhere final (usually 1)

Text

Description automatically generatedText

Description automatically generatedText

Description automatically generatedText, letter

Description automatically generatedA picture containing text, clock, watch

Description automatically generatedA picture containing logo

Description automatically generatedGraphical user interface, text, application

Description automatically generatedTable

Description automatically generatedText

Description automatically generatedText

Description automatically generatedA picture containing text, clock

Description automatically generatedA picture containing clock

Description automatically generated Diagram, schematic

Description automatically generatedA picture containing text, clock

Description automatically generatedText

Description automatically generatedA picture containing text, clock

Description automatically generatedText, letter

Description automatically generatedDiagram, schematic

Description automatically generatedA picture containing text

Description automatically generatedA picture containing text, watch, clock, gauge

Description automatically generatedA picture containing text, watch, clock

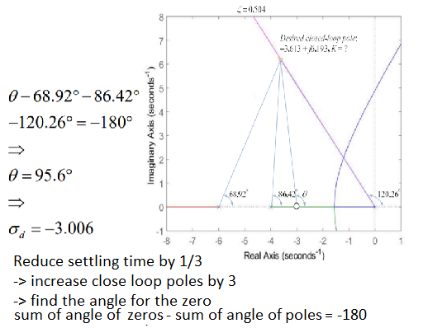
Description automatically generatedGraphical user interface, application

Description automatically generatedText, letter

Description automatically generatedText

Description automatically generated with low confidenceText, letter

Description automatically generated with medium confidenceChart, line chart

Description automatically generatedDiagram

Description automatically generatedText

Description automatically generated

1/(Ts/T)

Lead-lag:

Choose ωmax­ as 2/3ωBW

find phase margin

Φmax =

Desired – PM + 10

Find B and shit

build Glag(s) and Glead(s)

Lead:

find phase margin

Φmax =

Desired – PM + 10

Find B

Find ωmax in dB by B

Find frequency by check -ωmax from 0

Find 1/T

build Gc(s)

Steady/Lag:

Adjust K

find phase margin

PM+10

find frequency(ω0dB)

find change in dB

build Gc(s)

PI controller

Lag compensator

%OS:

find phase margin

find frequency

find gain in dB

PID

1. PD
2. PI
3. PID

Lead compensator(Modified PD)

Use when K = inf / locus become **+**

Pole = (s+42.96)

Zero = (s+5)

PD controller

Im/(-Re+σ) = tan(180-θ)