

# EENG307: PD Design Using Root Locus and SISOtool<sup>1</sup>

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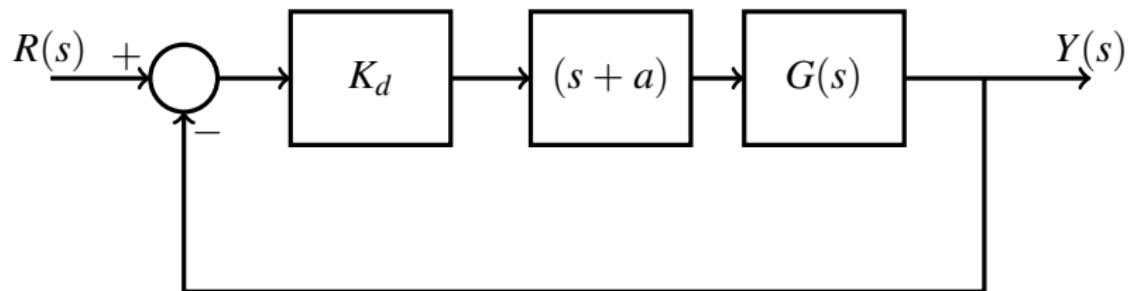
## Lecture 19

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# Root Locus Design Problem



Control System Designer - Bode Editor for LoopTransfer\_C

**CONTROL SYSTEM**    **BODE EDITOR**    **VIEW**

**FILE**    **ARCHITECTURE**    **TUNING METHODS**    **ANALYSIS**    **DESIGNS**    **RESULTS**    **PREFERENCES**

**Open Session**    **Save Session**    **Edit Architecture**    **Multimodel Configuration**

**Data Browser**

- ▼ Controllers and Fixed Blocks
  - F
  - C
  - G
  - H
- ▼ Designs
- ▼ Responses
  - LoopTransfer\_C
  - IOTransfer\_r2y
  - IOTransfer\_r2u

**Bode Editor for LoopTransfer\_C**

Bode Editor for LoopTransfer\_C

Magnitude (dB)

Phase (deg)

G.M.: inf  
Freq: NaN  
Stable loop

P.M.: -180 deg  
Freq: 0 rad/s

**Root Locus Editor for Lo**

Root Locus Editor

Imag Axis

**Step Response**

From: r To: y

Step Response

From: r To: y

Root Locus II

(CSM)      Root Locus II      Lecture 19      3/13

**Edit Architecture - Configuration 1**

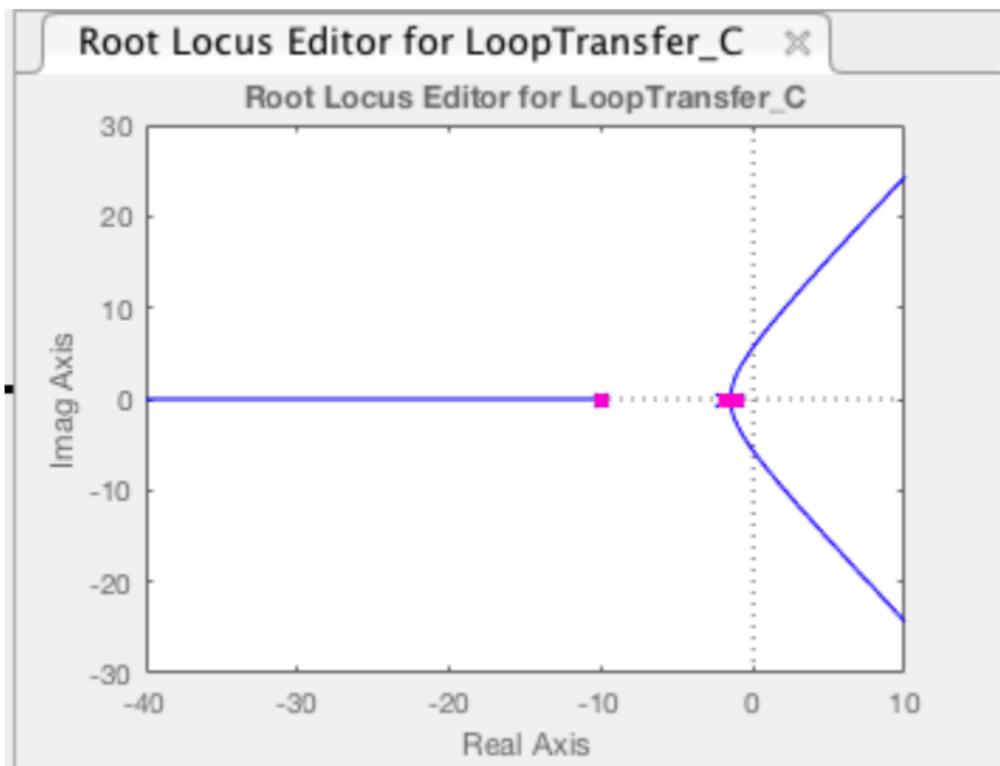
Select Control Architecture:

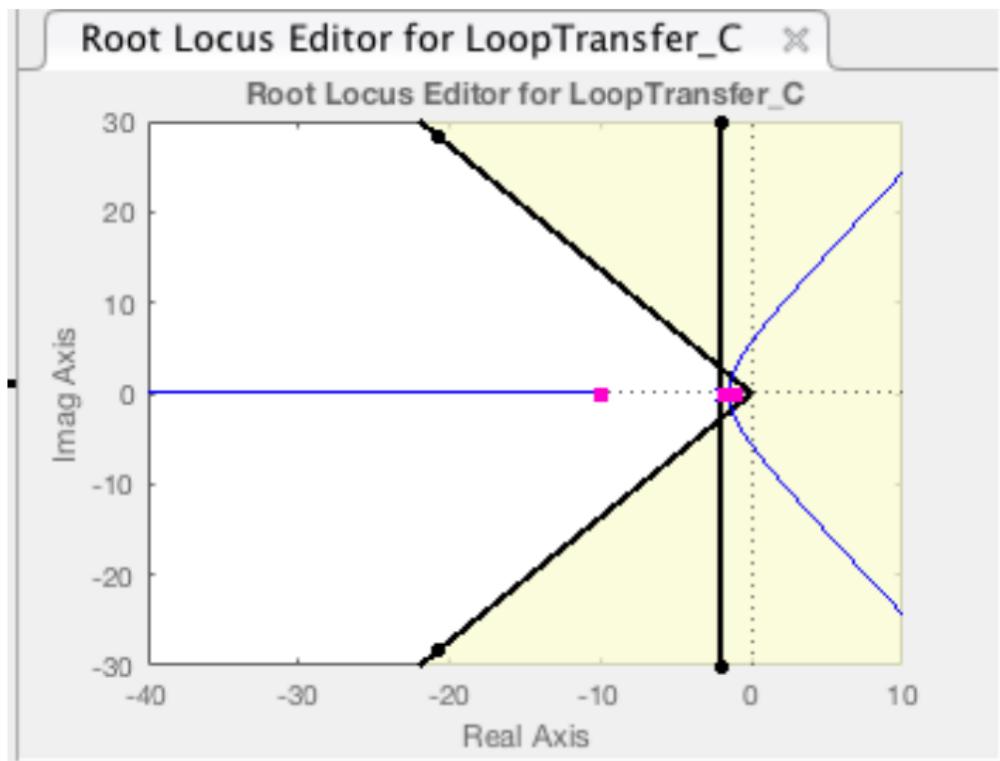
```
graph LR; r((r)) --> F[F]; F -- e --> C[C]; C -- uC --> G[G]; G -- u --> H[H]; H -- n --> F; G -- dy --> H; H -- y --> y((y))
```

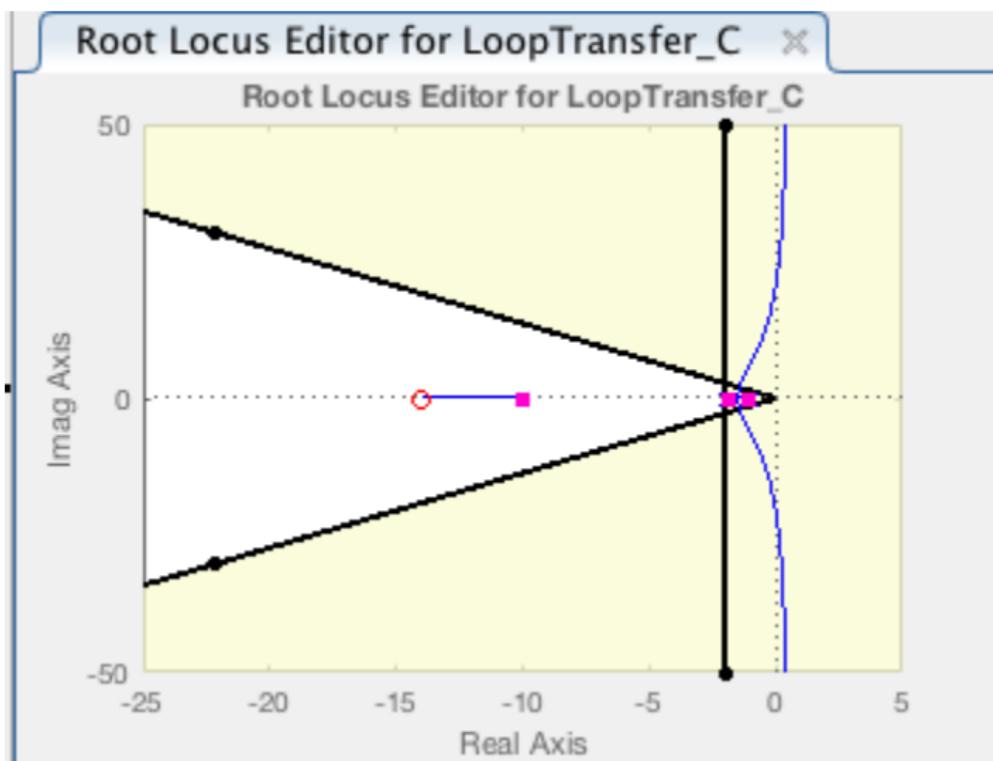
Blocks Loop Signs

Identifier	Block Name	Value
C	C	<1x1 zpk>
F	F	<1x1 zpk>
G	G	sys
H	H	<1x1 tf>

OK Cancel Help







The screenshot shows the MATLAB sisotool interface. On the left, the 'Data Browser' pane displays a list under 'Controllers and Fixed Blocks' with items F, C, G, and H. Item C is highlighted with a gray background. On the right, the 'Preview' pane shows details for a 'Tunable Block' named 'C' with a sample time of 0. The current value is listed as  $0.071353 (s+14.01)$ .

Data Browser

▼ Controllers and Fixed Blocks

F  
C  
G  
H

▼ Preview

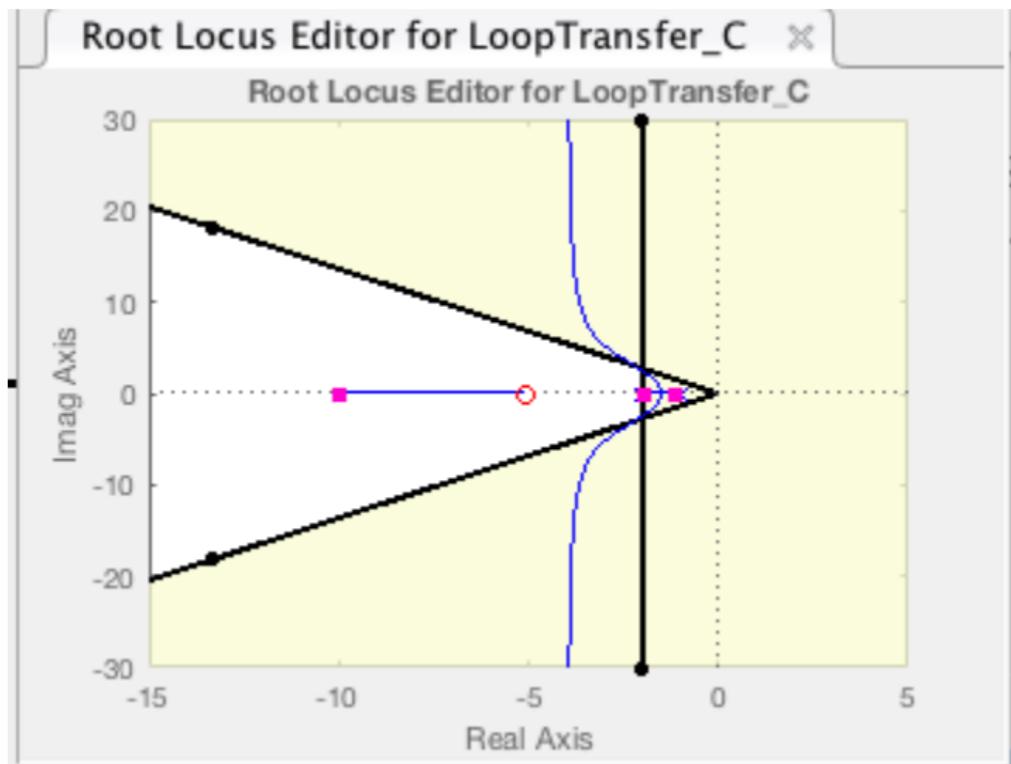
Tunable Block

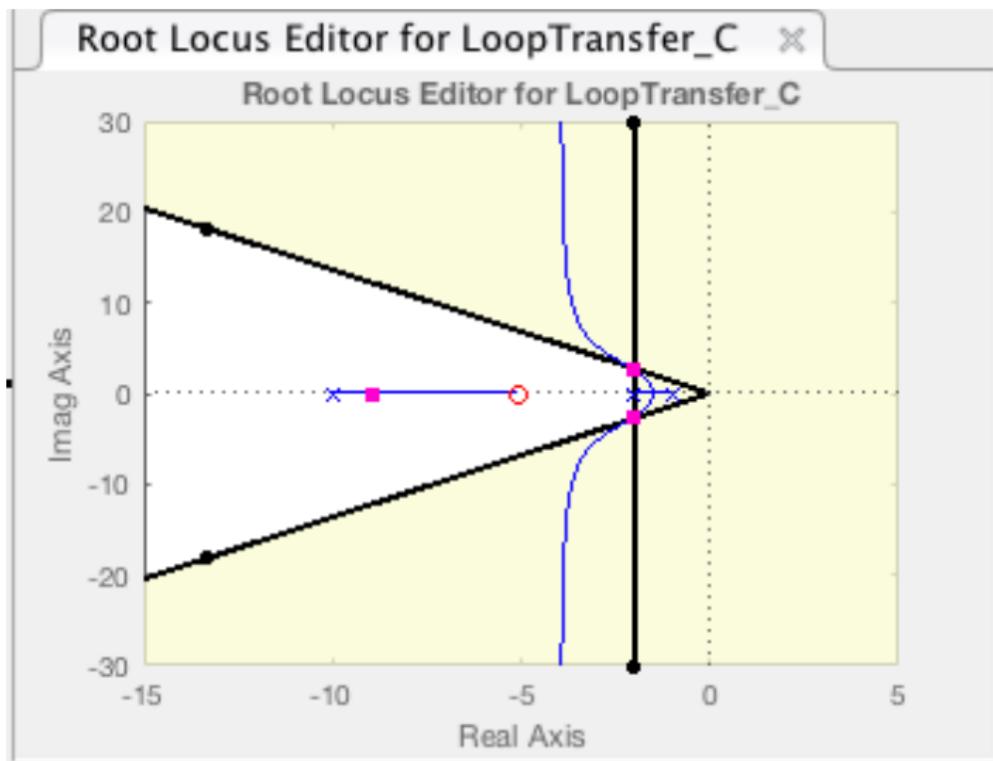
Name: C

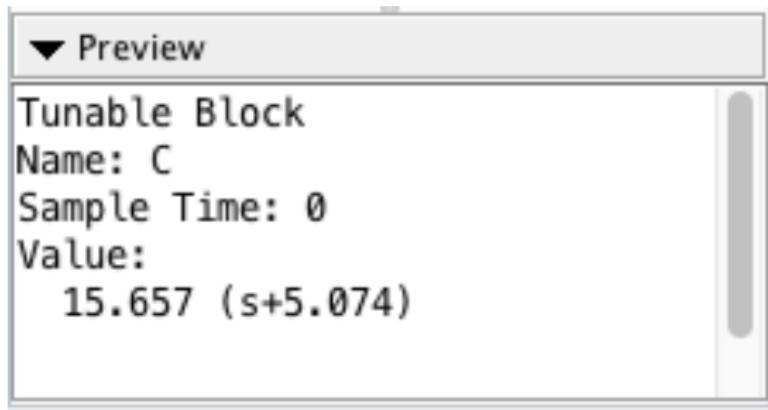
Sample Time: 0

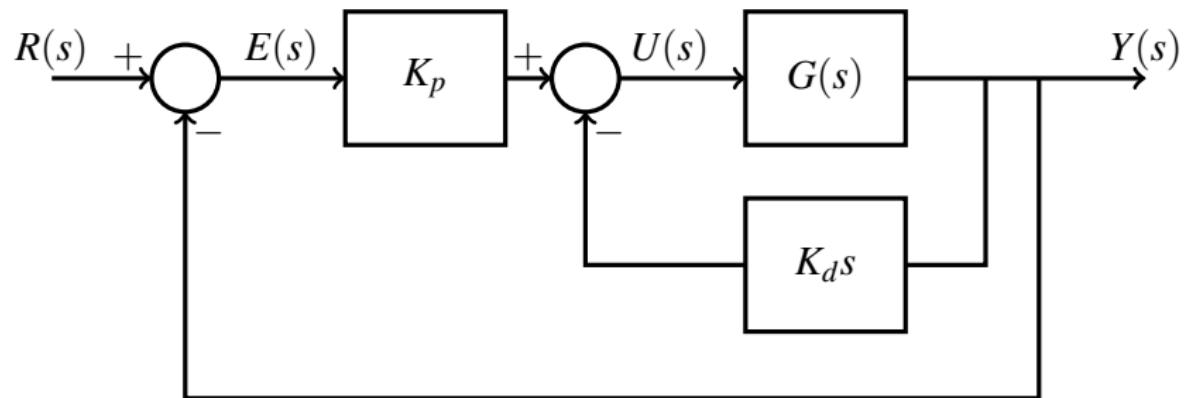
Value:

$0.071353 (s+14.01)$









» step(T)

