Indian Institute of Technology Bombay

Project Report

AE 308
Control Theory

Compensator Design

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1 Introduction

The given system is a third order type one system with a zero at origin and two poles at -10 and -1. The transfer function of the system is given by:

$$G(s) = \frac{K}{s(0.1s+1)(s+1)}$$

Bode plot of the system (taking $K = 4$):

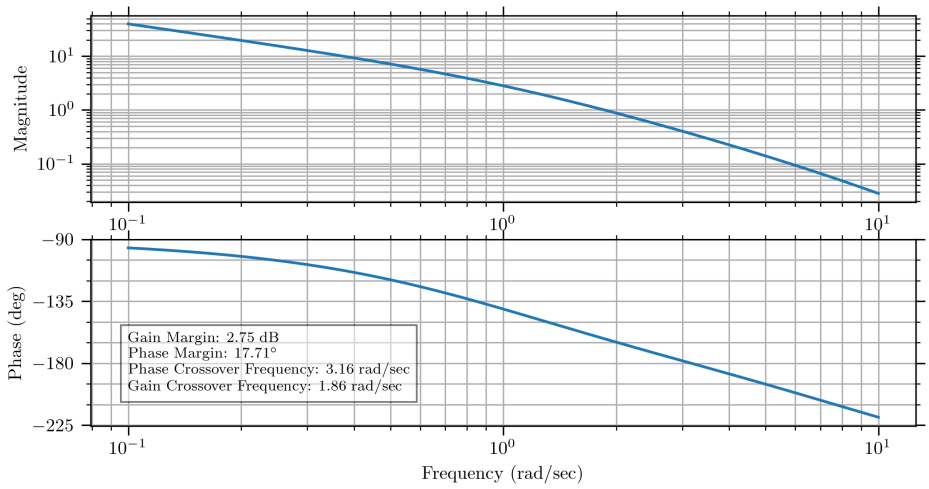

Figure 1: Bode plot of the uncompensated system

Root locus of the system (taking $K = 4$):

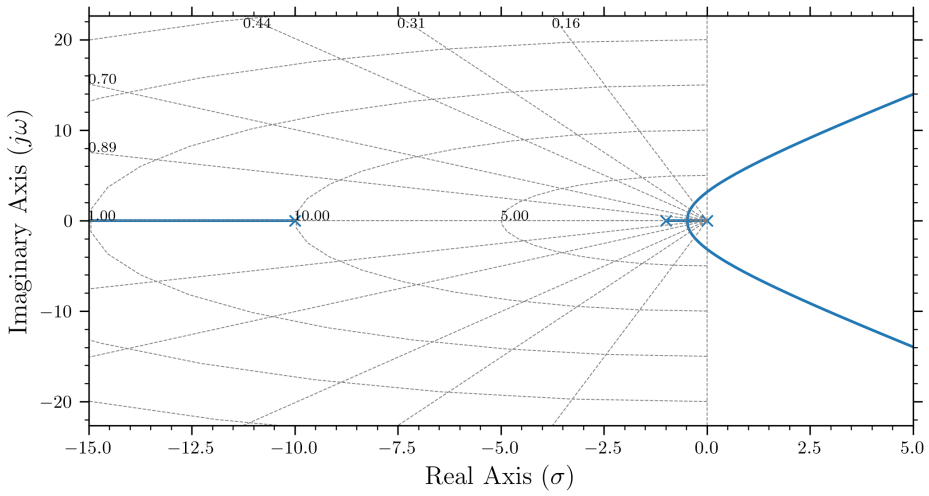

Figure 2: Root locus of the uncompensated system

Step response of the system (taking $K = 4$):

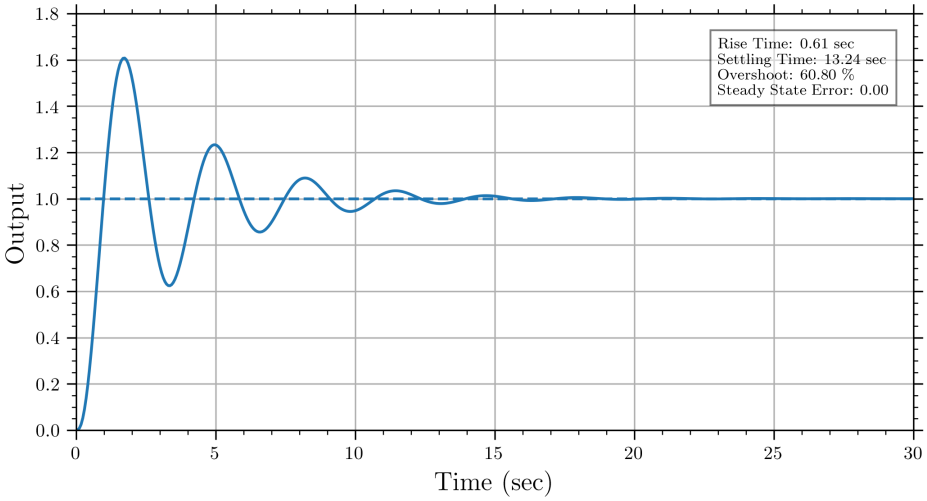

Figure 3: Step response of the uncompensated system

Ramp response of the system (taking $K = 4$):

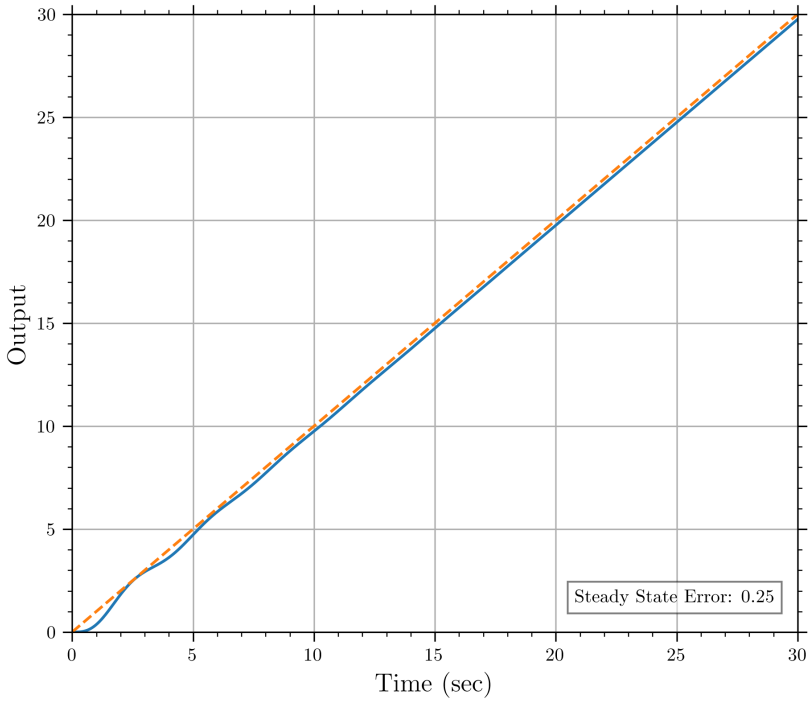

Figure 4: Ramp response of the uncompensated system

2 Control Objectives

3 Compensator Design

4 Simulation Results

5 Conclusion