Contents

Controller Design for Motor Speed Controller

```
L = 0.23e-3;

cm = 23.4e-3;

R = 2.4;

J = 0.23e-6;

D = 0.4191e-5;

U = 240;
```

Equation generated for Controller Design of the Motor

Transfer Function of the model:

4.423e08

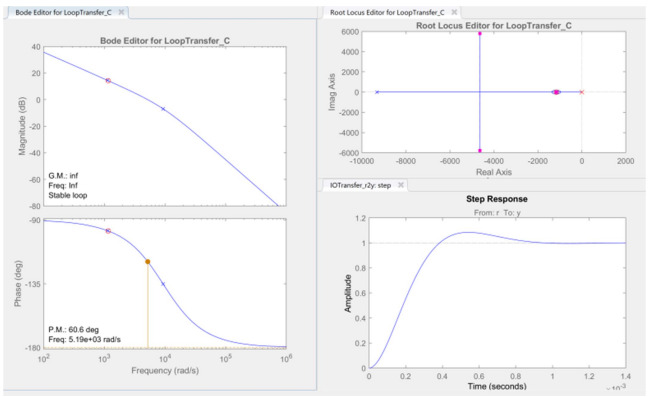
---

s^2 + 1.045e04 s + 1.054e07

Zero-Pole-Gain:

4.4234e+08

(s+9322) (s+1131)



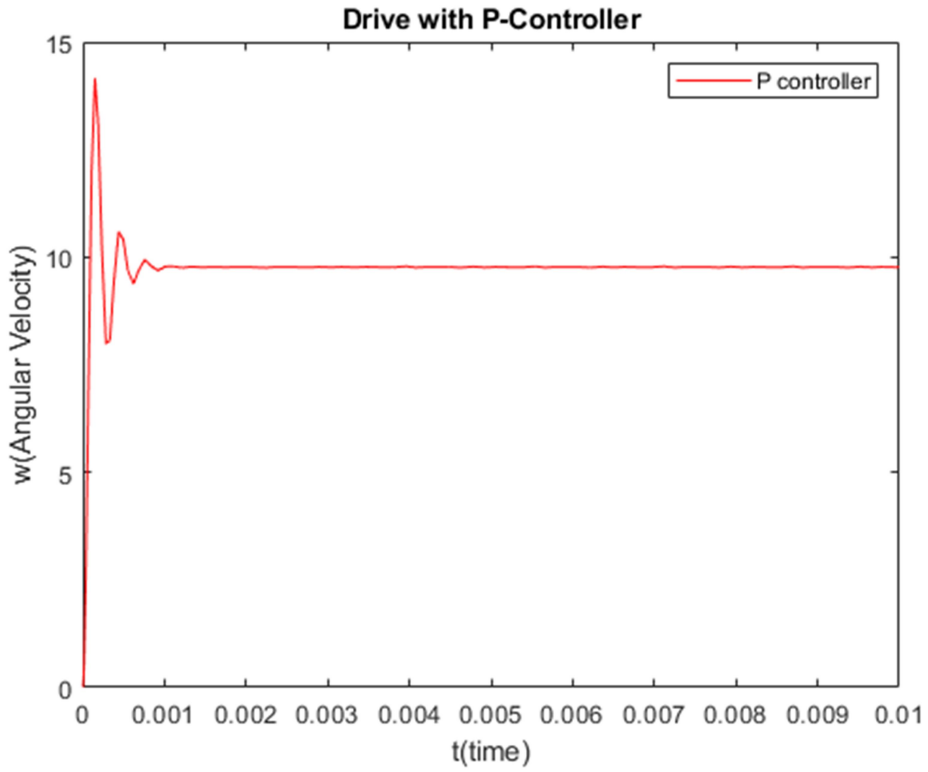
*Integrator and zeros added while PM = 60deg

PI Controller:

$$\frac{0.12516\,(s+1160)}{s}$$

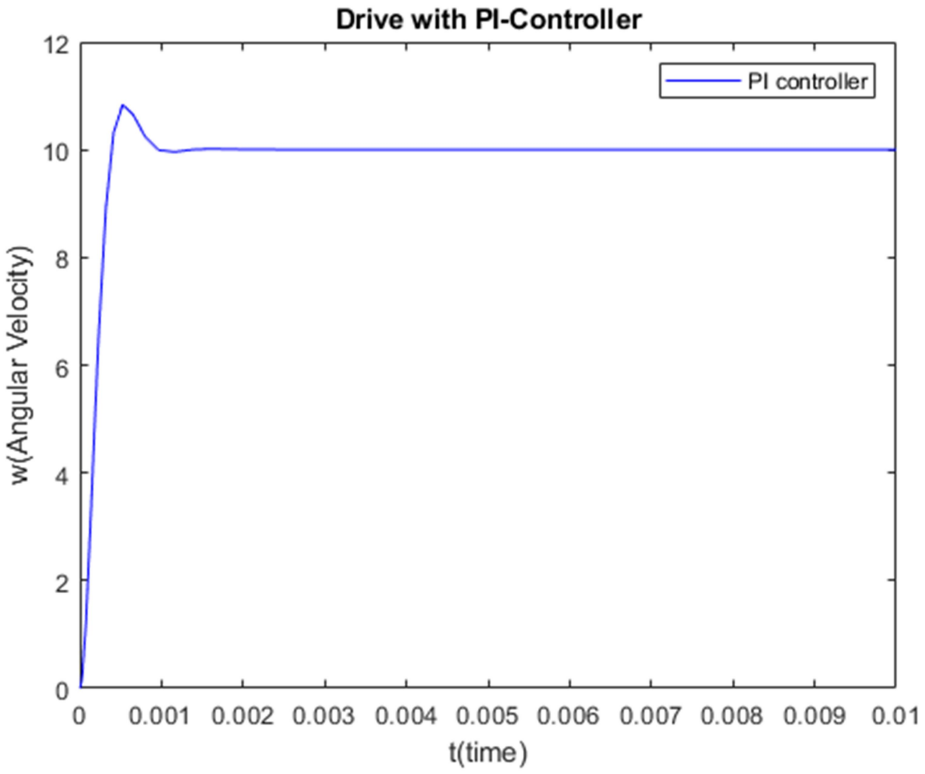
Drive with P-Controller

```
figure(1);

plot(ScopeData.time,ScopeData.signals(1).values(:,1),'r');
legend('P controller');
xlabel('t(time)');ylabel('w(Angular Velocity)');
title('Drive with P-Controller');
```



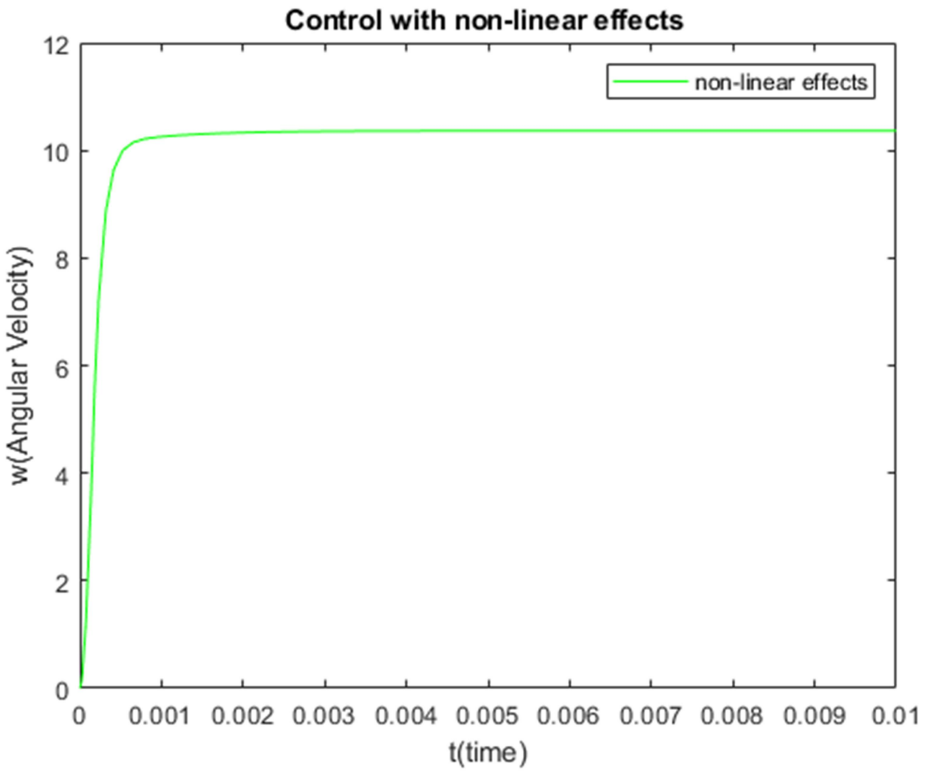
Drive with PI-Controller

```
figure(2);

plot(ScopeData1.time,ScopeData1.signals(1).values(:,1),'b');
legend('PI controller');
xlabel('t(time)');ylabel('w(Angular Velocity)');
title('Drive with PI-Controller');
```



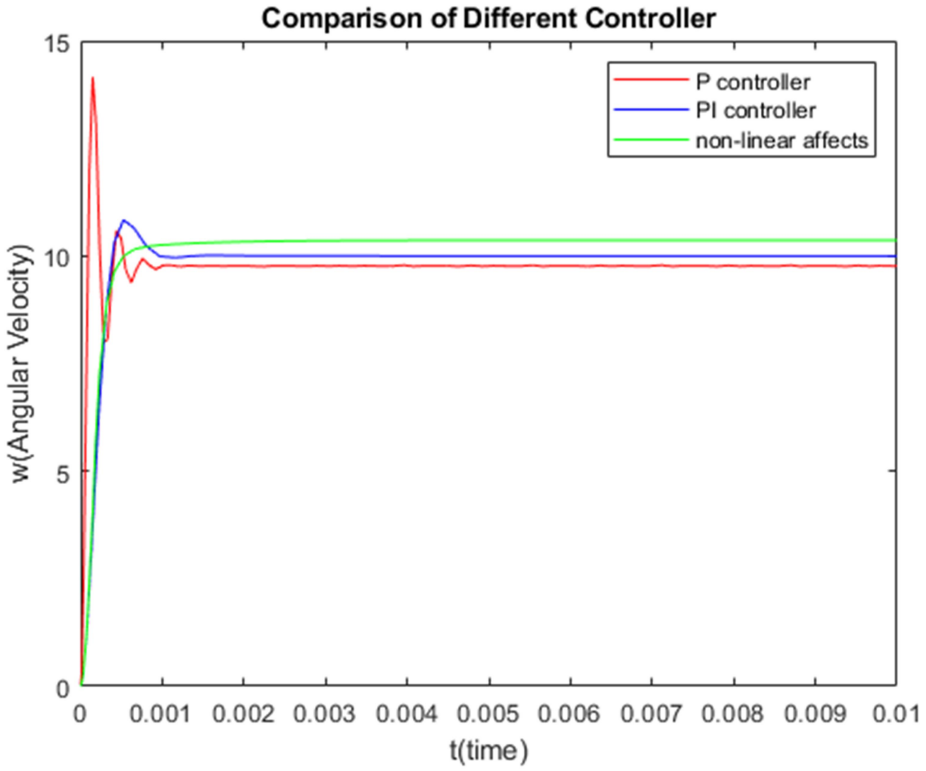
Non-Linear effects

```
figure(3);

plot(ScopeData1.time,ScopeData2.signals(1).values(:,1),'g');
legend('non-linear effects');
xlabel('t(time)');ylabel('w(Angular Velocity)');
title('Control with non-linear effects ');
```



Comparison of Different Controller

```
figure(4);

plot(ScopeData.time,ScopeData.signals(1).values(:,1),'r',...
    ScopeData1.time,ScopeData1.signals(1).values(:,1),'b',...
    ScopeData1.time,ScopeData2.signals(1).values(:,1),'g');
legend('P controller','PI controller','non-linear affects');
xlabel('t(time)');ylabel('w(Angular Velocity)');
title('Comparison of Different Controller');
```



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