

Experiment Problem Set Eight

Prior to all experiments: check your battery voltage! Charge if necessary.

Experiment 8. Closed Loop Step Response

Due Monday, May 1, 2013

Set up an experiment with V1_REF at 0.3 m/sec, 5 seconds, PID control, Velocity Reference=Step.

Set KP, KI, KD to the values you determined in the previous experiment.

Run a few step tests and record the rise time, overshoot, and settling time.

Experiment 9. Closed Loop Bode Plot

Due Monday, May 1, 2013

Set up an experiment with V1_REF at 0.3 m/sec, 5 seconds, PID control, Velocity Reference = Sine.

Set KP, KI, KD to the values you determined in the previous experiment.

Vary test frequency and record gain and phase. Create an experimental Bode plot of your closed loop system.

Remember to sweep the frequency in a coarse set of steps before focusing around the pole locations. This system will be at least second order, so there may be multiple pole locations, depending on where you picked your PID constants.