Exercises for Chapter 8

1. Study the delay margin in the example presented in Figure 8.9. Compare with what we teach in our basic course!

2. Use the first line in Equation (8.18) to write the PPI controller in the time domain when $T_{cl} = T$. Compare with the PID controller. Which are the controller parameters in the PPI controller? Compare the prediction terms in the two controllers.

3. IE for a unit step load disturbance using a Smith predictor is given in Equation (8.11). Compare IE for a Smith predictor with the value obtained using a PI controller. Assume that the Smith predictor is a PPI controller with $T_{cl} = T$, and that the PI controller is tuned using lambda tuning with different values of T_{cl}

4. Study the paper *Comparison between robust PID and Predictive PI controllers with constrained control signal noise sensitivity* by Per-Ola Larsson. Discuss when to choose PID and dead-time compensating controllers, respectively.

Reading instructions for Chapter 8

8.1 Read.

8.2 Read.

8.3 Read.

8.4 Read.

8.5 Browse.

8.6 Browse.