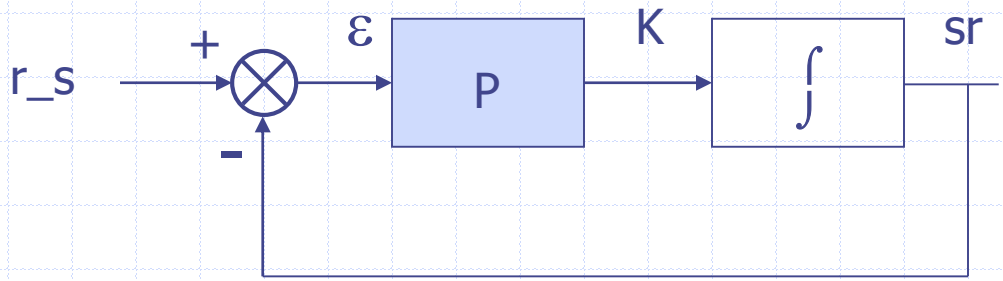
In4073
Embedded Real-Time Systems

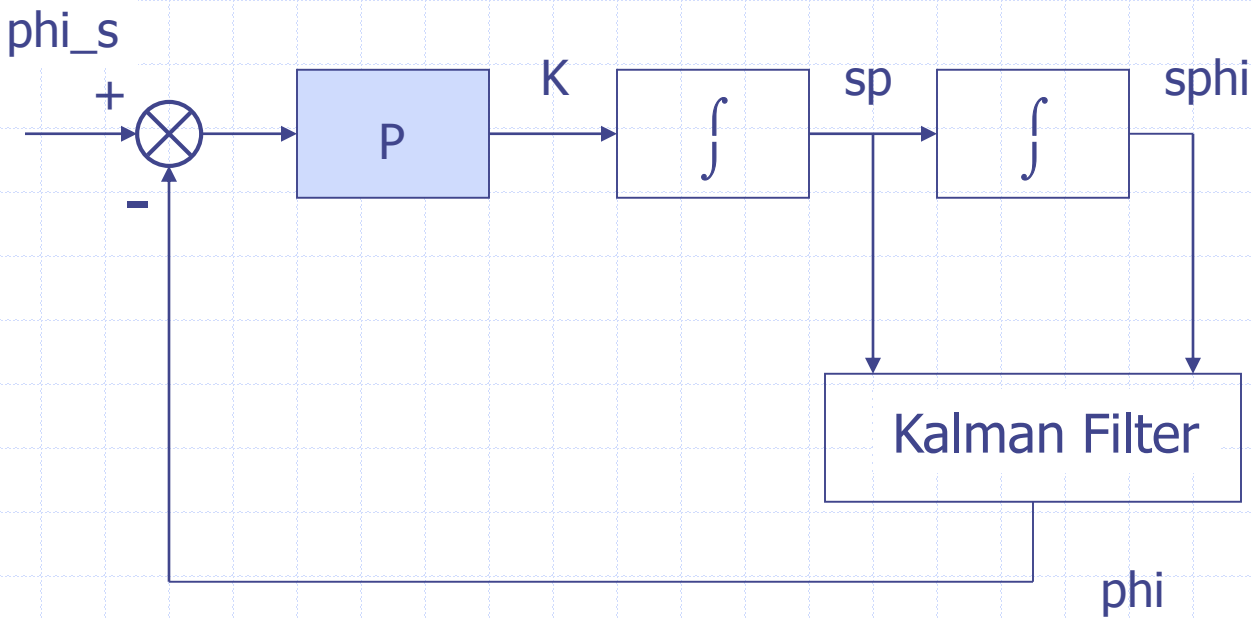
System Integration

Yaw control

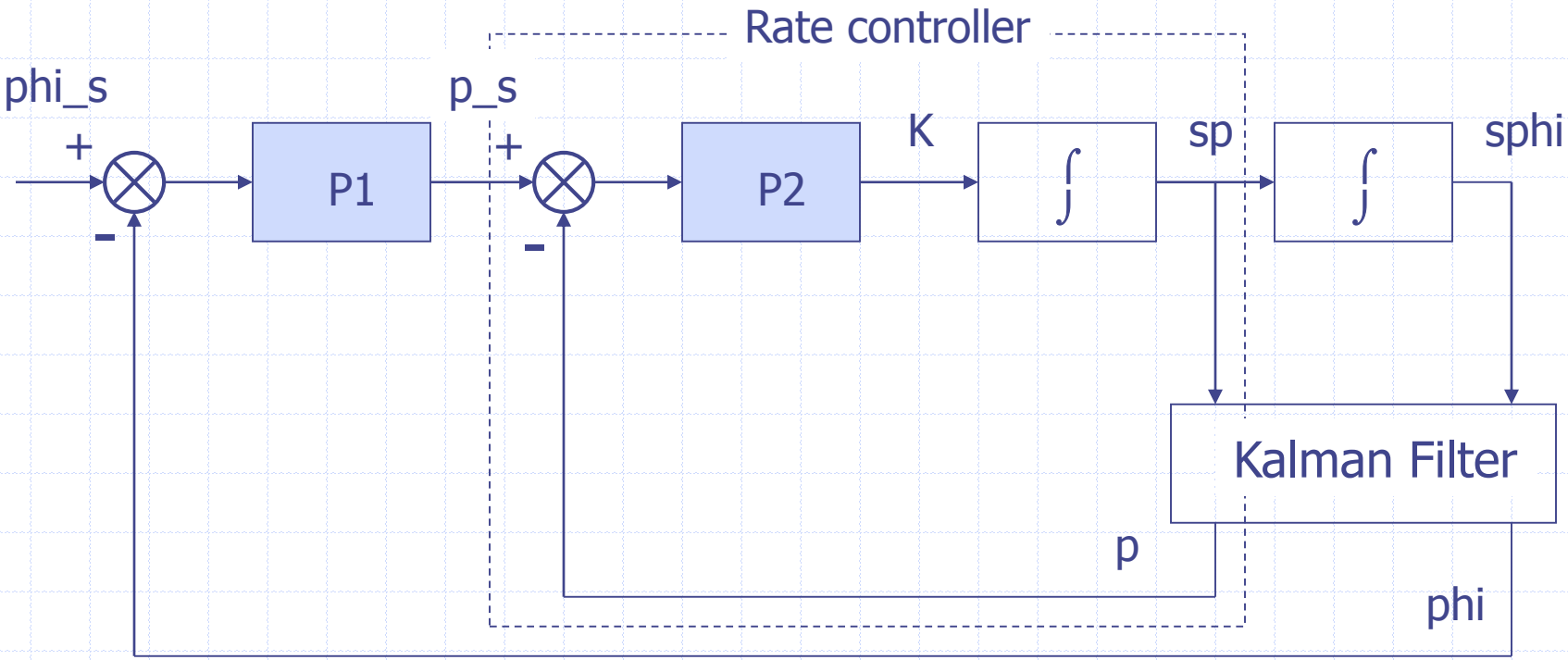


- Calibration (zeroing), continuous?
- Filtering?
  - Butterworth

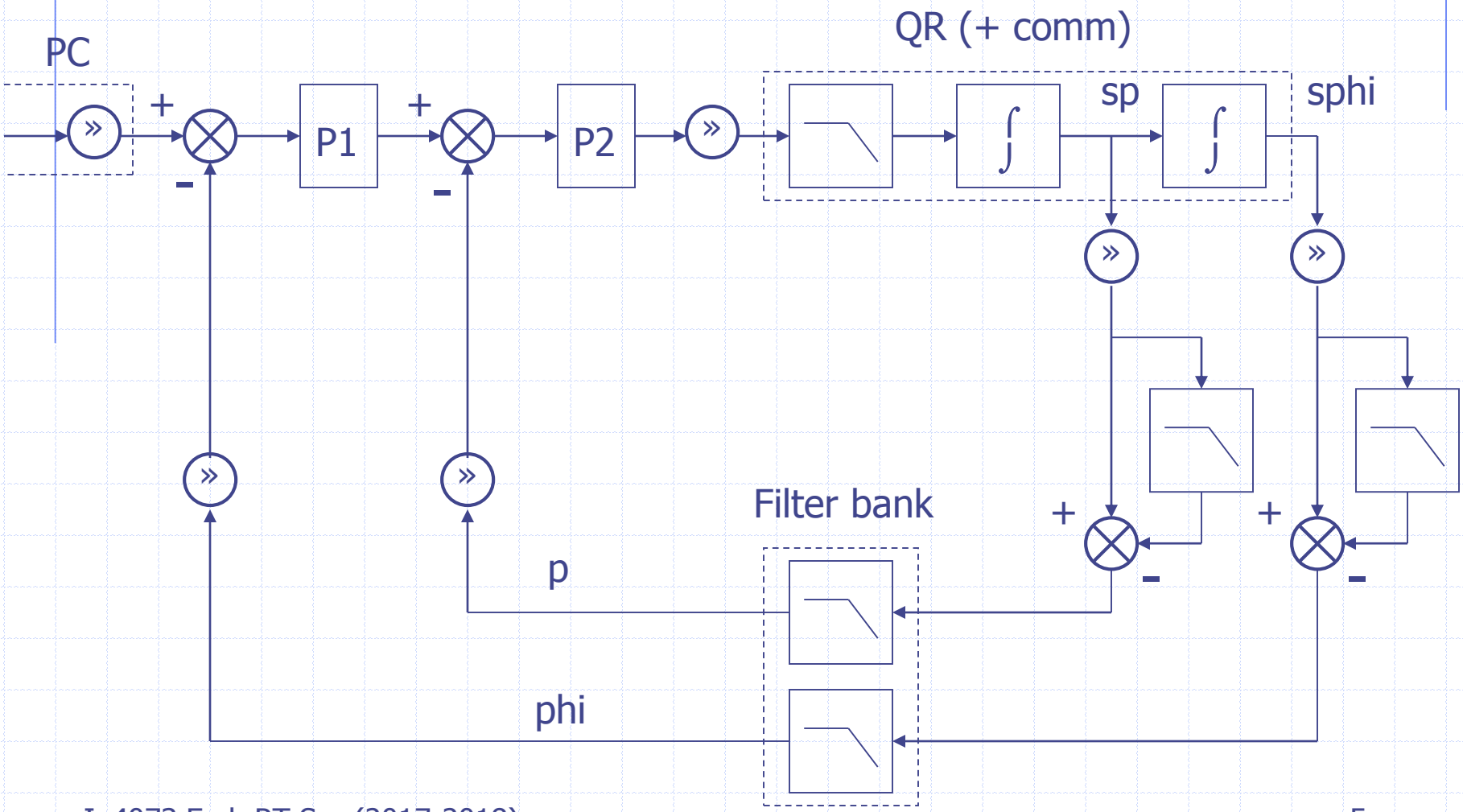
Angle: P-controller + Kalman filter



Angle: cascaded P control



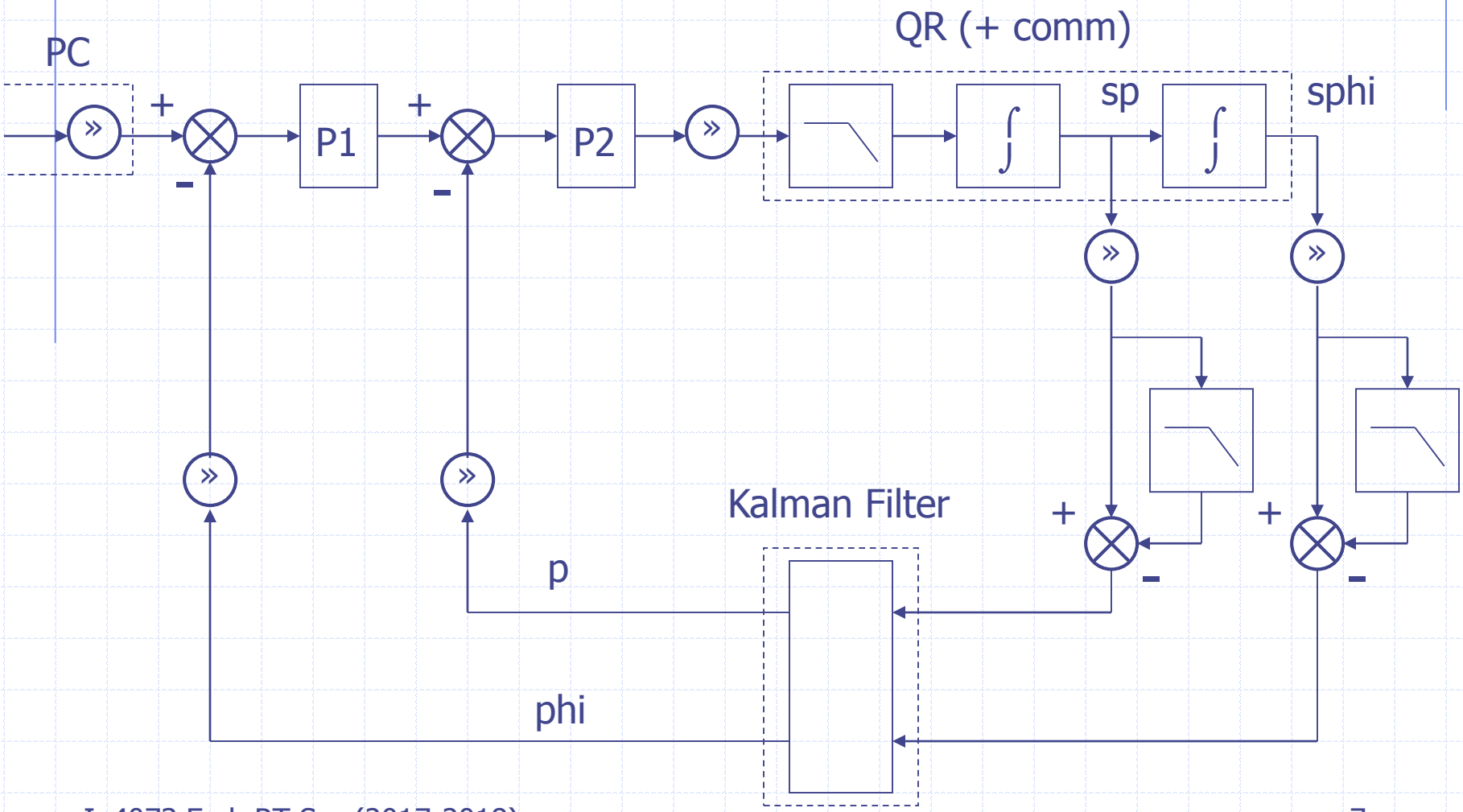
Example Signal Flow (Classic Filter)



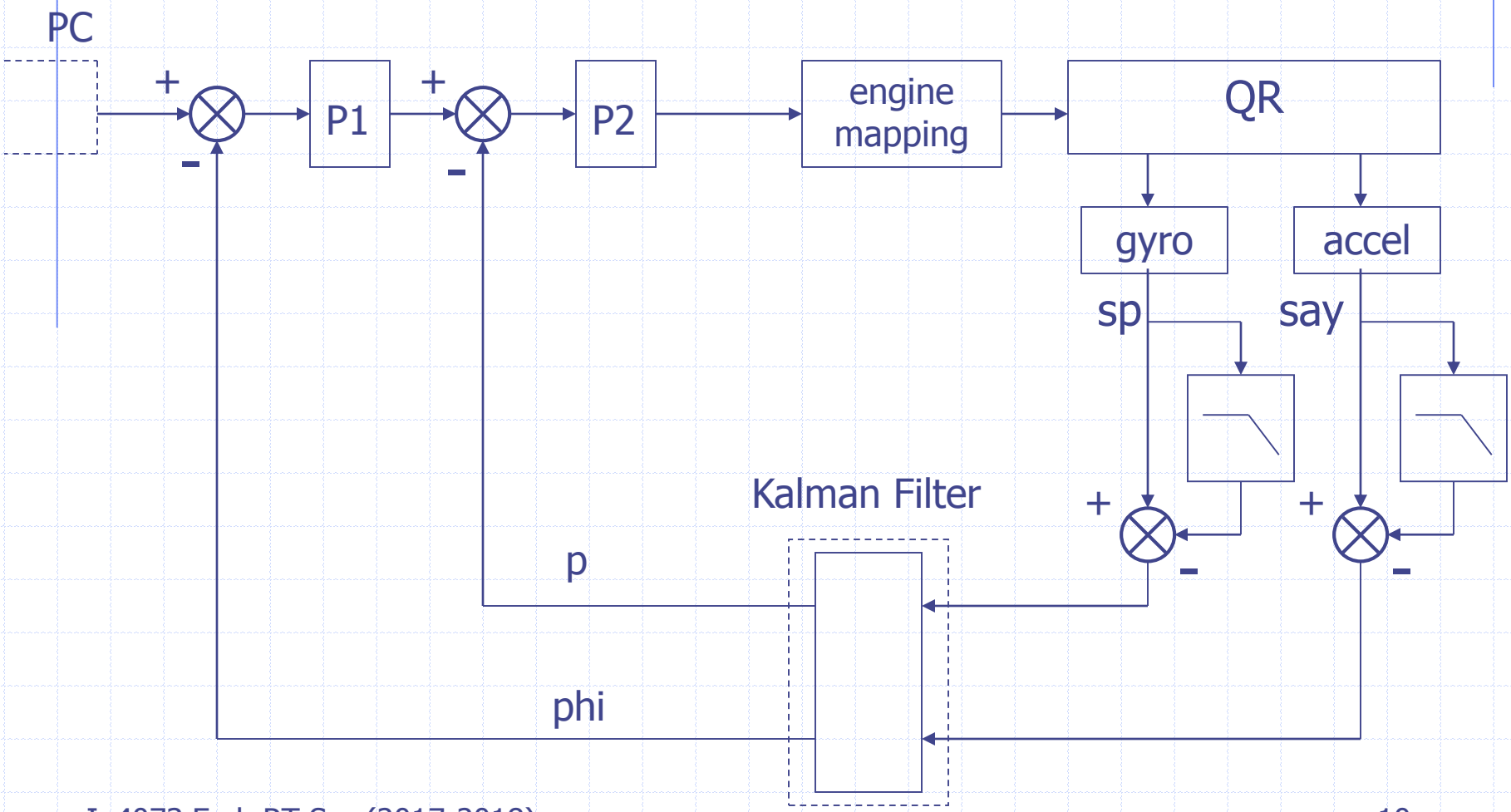
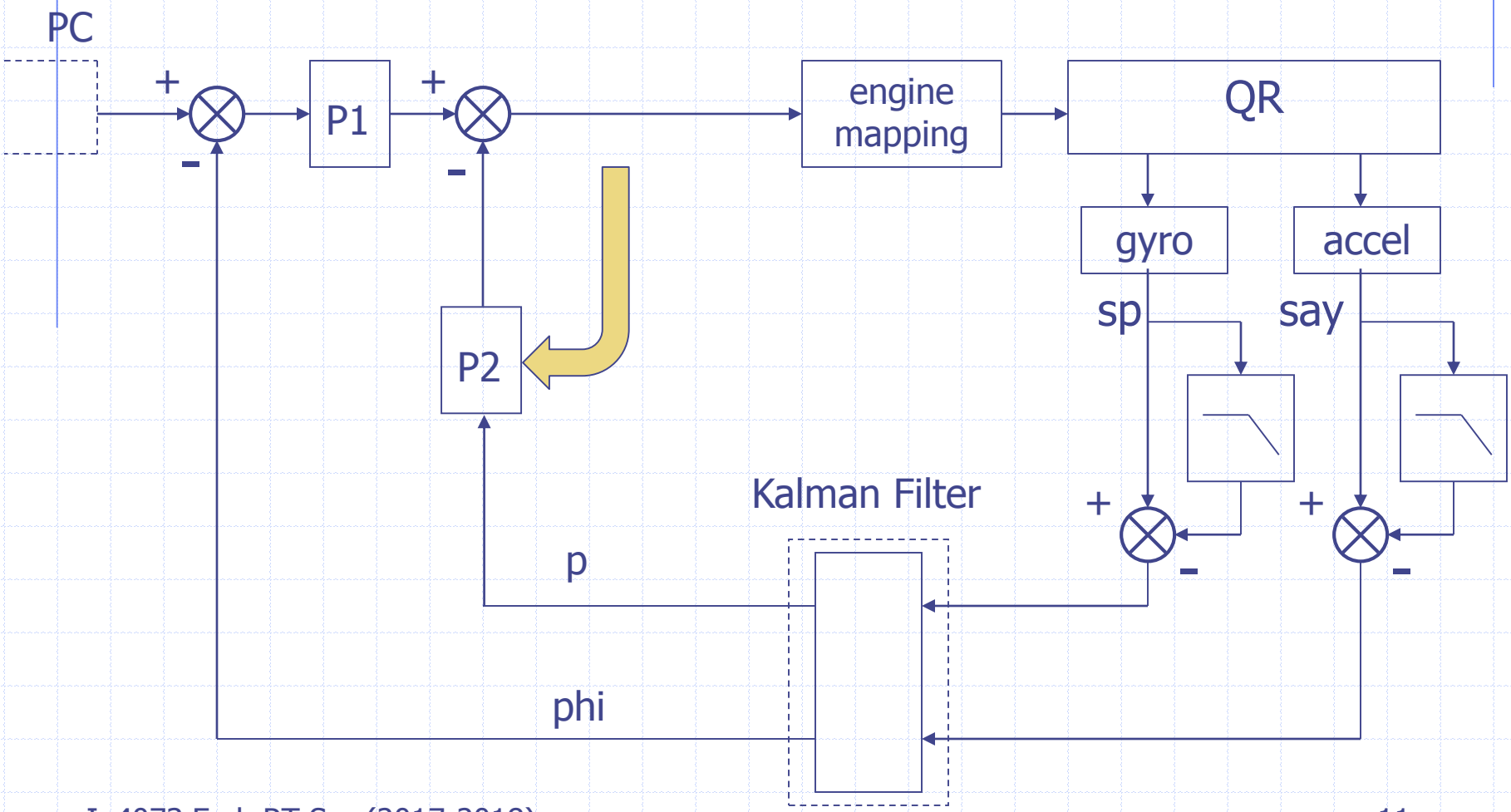
Notes on Filtering

- Classic filtering: trade-off noise vs. phase lag
- Kalman filter instead
- Sufficient resolution, especially for gyro bias (b)
- Non-zero angle bias at standstill
- Timing: angle loop is target

Example Signal Flow (Kalman Filter)



Signal Flow (Kalman Filter)



Signal Flow (Kalman Filter)