

Chapter 17

State estimation with observers

Exercise 17.1

Figure 17.1 shows an electric motor (a DC motor). It is manipulated with an input voltage signal, u , and the rotational speed is measured with a tachometer which produces a output voltage signal which is proportional to the speed. Assume that the speed, S [krpm = kilo revolutions per minute] is calculated continuously from the tachometer voltage. A proper

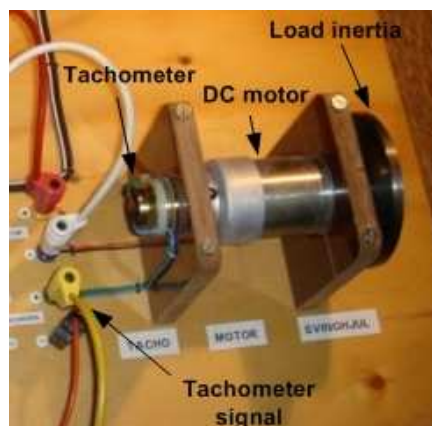


Figure 17.1:

mathematical model of the motor is

$$T_m \dot{S}(t) + S(t) = K_m [u(t) + L(t)] \quad (17.1)$$