

Using Matlab's Control System Toolbox to study continuous time linear system

The Control System Toolbox in Matlab supports continuous-time and discrete-time linear models of the following types:

- Transfer functions
- State-space models

Here we will discuss transfer function modeling of continuous-time function and leave the rest to future chapters.

Creating Models

The matlab function

An LTI-model can contain a *time-delay*, as in the following model:

$$H_d(s) = \frac{K_0 s}{T_0 s + 1} e^{-T_{\text{delay}} s}$$

This system is created by (except from the time-delay term, H_d is equal to H_0 defined above):

Time Response

To show the impulse response of a system, we use the command