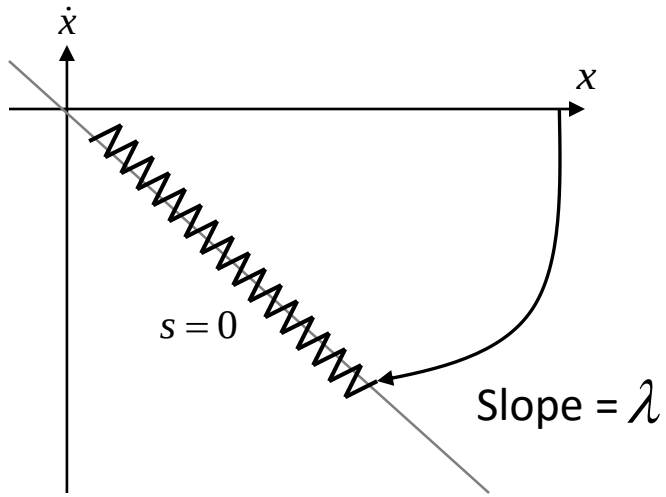
No boundary

$$u_{sw} = -K \times sign(s)$$

$$sign(s)\begin{cases} -1, s < 0 \\ 0, s = 0 \\ 1, s > 0 \end{cases}$$



With boundary

$$u_{sw} = -K \times sat(s)$$

$$sat(s)\begin{cases} -1, s < -\phi \\ \frac{s}{\phi}, -\phi \le s \le \phi \\ 1, s > \phi \end{cases}$$

$$0 < \phi < 1$$