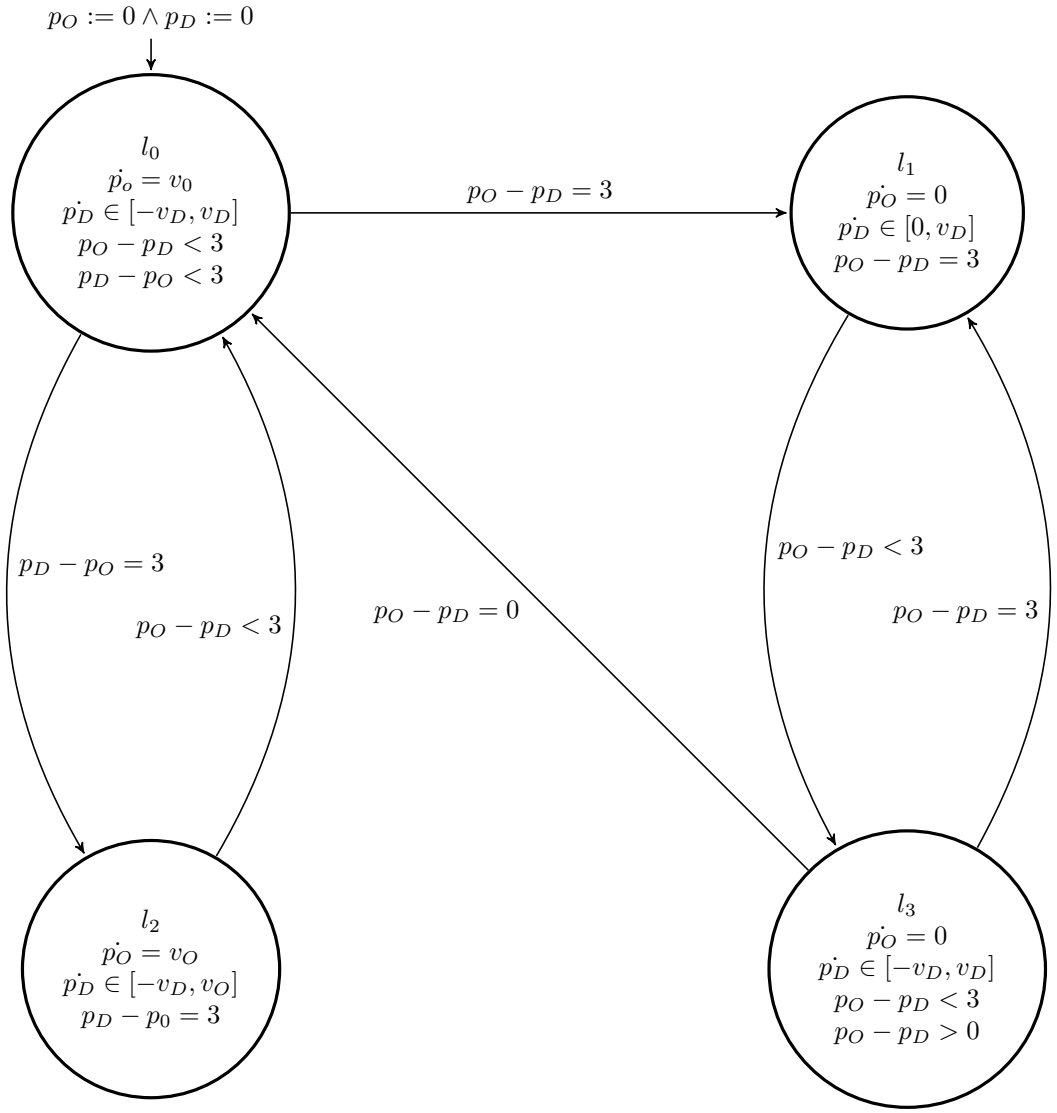
Aufgabe 1


$p_O := 0 \wedge p_D := 0$
l_0
$\dot{p_o} = v_0$
$\dot{p_D} \in [-v_D, v_D]$
$p_O - p_D < 3$
$p_D - p_O < 3$
$p_O - p_D = 3$
l_1
$\dot{p_O} = 0$
$\dot{p_D} \in [0, v_D]$
$p_O - p_D = 3$
$p_D - p_O = 3$
$p_O - p_D < 3$
$p_O - p_D = 0$
$p_O - p_D < 3$
$p_O - p_D = 3$
l_2
$\dot{p_O} = v_O$
$\dot{p_D} \in [-v_D, v_O]$
$p_D - p_0 = 3$
l_3
$\dot{p_O} = 0$
$\dot{p_D} \in [-v_D, v_D]$
$p_O - p_D < 3$
$p_O - p_D > 0$

Aufgabe 2

$$
\begin{aligned}
R_1 =& T_L^+(R_0) = (l_0, \exists t.\exists x_{pre}.\exists y_{pre}.t \geq 0 \wedge x = x_{pre} \wedge x_{pre} \in R_0 \wedge y = y_{pre} + t \wedge y_{pre} \in R_0 \wedge x + y \leq 4) \\
=& (l_0, \exists t.\exists x_{pre}.\exists y_{pre}.t \geq 0 \wedge x = x_{pre} \wedge y = y_{pre} + t \wedge x + y \leq 4 \wedge x_{pre} = y_{pre} = 0) \\
=& (l_0, \exists t.t \geq 0 \wedge x = 0 \wedge y = t \wedge x + y \leq 4) \\
=& (l_0, \exists t.t \geq 0 \wedge x = 0 \wedge y = t \wedge y \leq 4) \\
=& (l_0, x = 0 \wedge y \geq 0 \wedge y \leq 4)
\end{aligned}
$$

$$
\begin{aligned}
R_2 =& D_L^+(R_1) = (l_1, \exists x_{pre}.\exists y_{pre}.x_{pre} \in R_1 \wedge y_{pre} \in R_1 \wedge x \leq 3 \wedge x = x_{pre} \wedge y = y_{pre}) \\
=& (l_1, \exists x_{pre}.\exists y_{pre}. \wedge x = x_{pre} \wedge y = y_{pre} \wedge x \leq 3 \wedge y_{pre} \geq 0 \wedge y_{pre} \leq 4 \wedge x_{pre} = 0) \\
=& (l_1, x = 0 \wedge y \leq 4 \wedge y \geq 0)
\end{aligned}
$$

$$
\begin{aligned}
R_3 =& T_L^+(R_2) = (l_1, \exists t.\exists x_{pre}.\exists y_{pre}.t \geq 0 \wedge x_{pre} \in R_2 \wedge y_{pre} \in R_2 \wedge x = x_{pre} + t \wedge y = y_{pre} + t \wedge x \leq 3) \\
=& (l_1, \exists t.\exists x_{pre}.\exists y_{pre}.t \geq 0 \wedge x_{pre} = 0 \wedge y_{pre} \leq 4 \wedge y_{pre} \geq 0 \wedge x = x_{pre} + t \wedge y = y_{pre} + t \wedge x \leq 3) \\
=& (l_1, \exists t.t \geq 0 \wedge x = t \wedge y \leq 4 + t \wedge x \leq 3)
\end{aligned}
$$

$$
\begin{aligned}
R_4 =& D_L^+(R_3) = (l_0, \exists x_{pre}.\exists y_{pre}.x_{pre} \in R_3 \wedge y_{pre} \in R_3 \wedge x = 0 \wedge y = 0 \wedge x + y \leq 4) \\
=& (l_0, \exists t.\exists x_{pre}.\exists y_{pre}.t \geq 0 \wedge x_{pre} = t \wedge y_{pre} \leq 4 + t \wedge x_{pre} \leq 3 \wedge x = 0 \wedge y = 0 \wedge x + y \leq 4) \\
=& (l_0, \exists t.t \geq 0 \wedge x = 0 \wedge y = 0) \\
=& (l_0, x = 0 \wedge y = 0)
\end{aligned}
$$

$$
P_2 = \{R_4\} = \{(l_0, x = 0 \wedge y = 0)\}
$$