

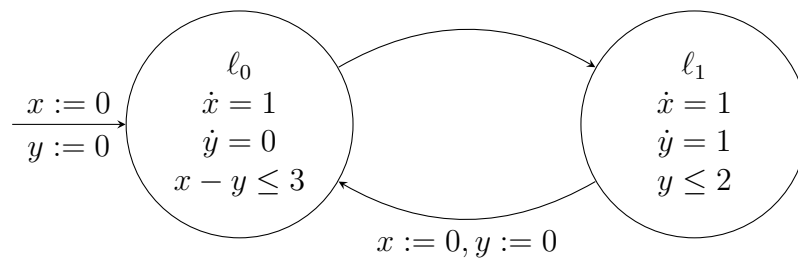


## Tutorial for Cyber-Physical Systems - Hybrid Models

### Exercise Sheet 9

#### Exercise 1: Forward reachability analysis of LHA

Consider the following linear hybrid automaton  $\mathcal{H}$ :



For a given linear hybrid automaton and  $i \in \mathbb{N}$  we define  $R_i \subseteq \Sigma$  inductively as follows:

$$R_i = \begin{cases} \text{Init} & i = 0 \\ \langle \text{post}[R_{i-1}] \rangle^\nearrow & i > 0 \end{cases}$$

- What does  $R_i$  describe?
- Compute  $R_2$  for  $\mathcal{H}$ .
- What can you say about  $R_3$ ? What are the consequences?