RWTH AACHEN
Theory of Hybrid Systems
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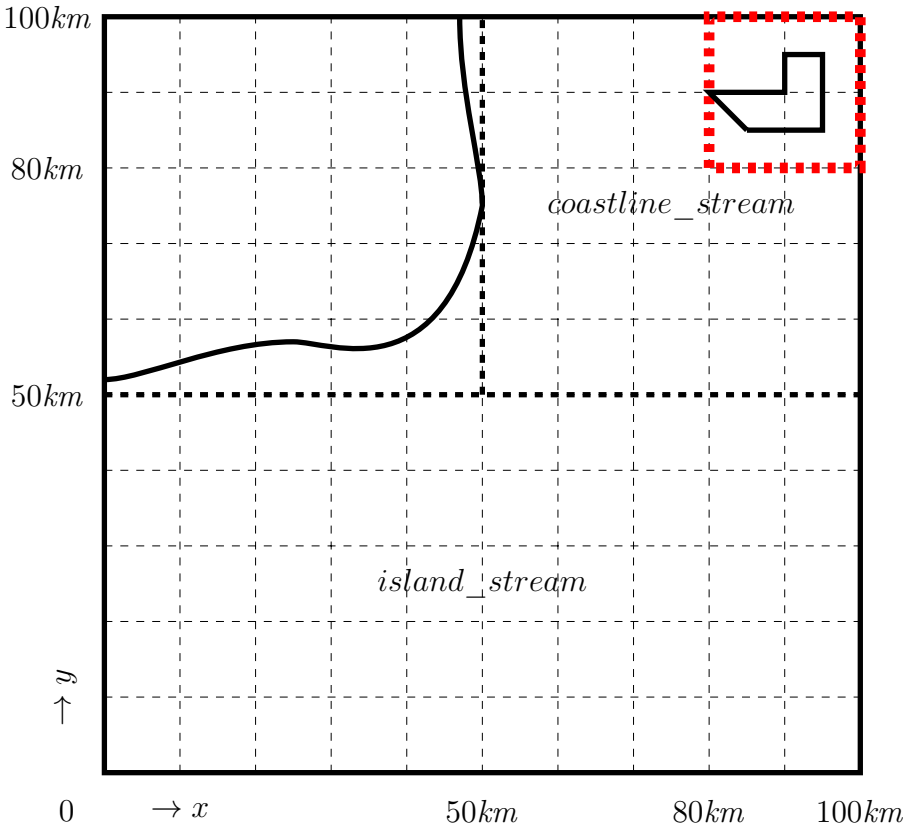
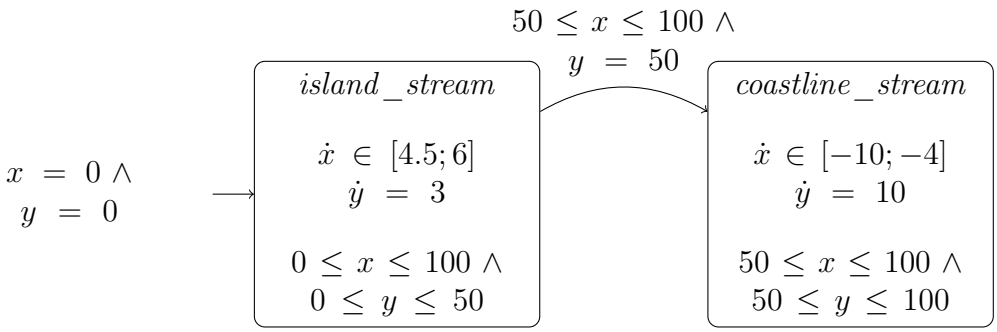
Modeling and Analysis of Hybrid Systems - SS 2015

Series 7

Exercise 1



A group of pupils is stranded on an island after their airplane crashed (cf. "The lord of the flies", William Golding 1954). They want to send a bottle message to get rescued. The strongest of them (Jack) throws the bottle into the stream (starting position of the bottle: $(0, 0)$) at the island, which is quite slow (modelled by location *island_stream*). Near the coastline, the stream speeds up and changes direction (location *coastline_stream*). If the bottle can reach the small area northeast (see drawing), where a military ship is located, the pupils have a chance to be rescued.



a) Please use the forward analysis algorithm presented in the lecture to check, if there exists a possibility of a rescue (determine, if the state ($coastline\_stream, 80 \leq x \leq 100 \wedge 80 \leq x \leq 100$) can be reached).

b) Please sketch the reachable area in the map.