Theoretical Aspects of Intruder Search

Course Wintersemester 2015/16
General bounds for geometric firefighting

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Results so far

- Constructing single firebreak
- Spiralling strategies
- Lower bound $v \leq 1.618$, Upper bound $v > 2.614 \ldots$
- General strategies, build the path where you want
- Distibute the speed v to different agents
- Lower and upper bound
- Speed $v \in (1, 2]$ still unknown!!!

Theorem 68: For any speed $v > 2$ there is a successful general strategy that encloses any spreading fire circle. For speed $v \leq 1$ there is no such general strategy.
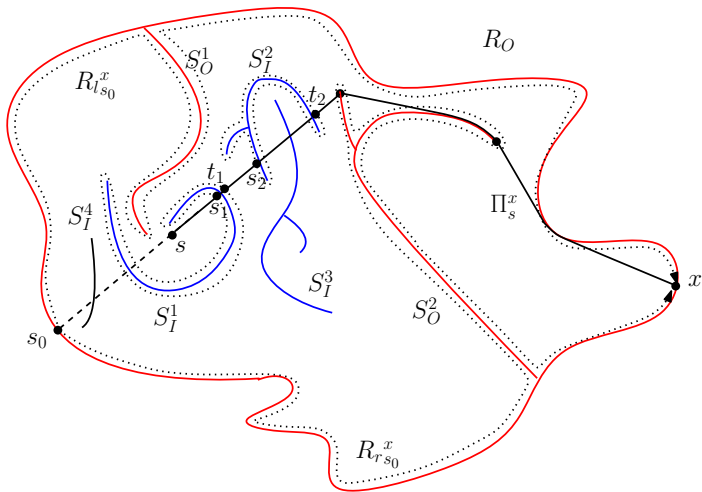
For any speed $v > 2$, two spirals with speed $v/2 = \frac{1}{\cos\alpha}$
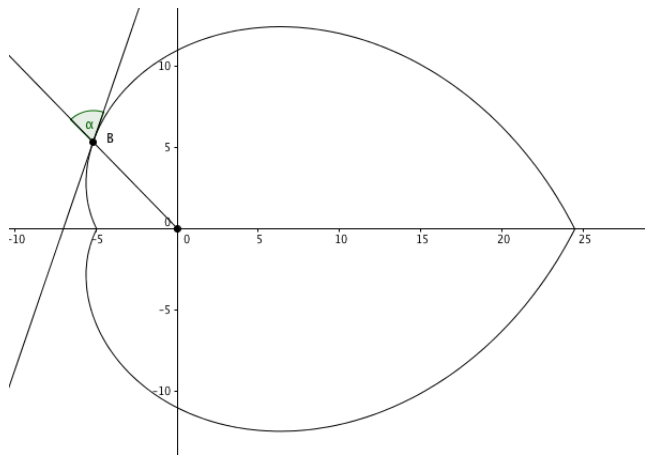
For speed $v = 1$ consider a successful strategy!

Lower bound

- Neglect inner obstacles
- Fire reaches s earlier than the construction was finished!