Panic
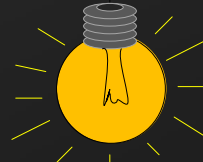
Alexander Späh & Julian Schmidt

Aim

Simulating dynamical features of escape panic

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One of the most disastrous forms of collective human behaviour is the kind of crowd stampede induced by panic, often leading to fatalities as people are crushed or trampled. Sometimes this behaviour is triggered in life-threatening situations such as fires in crowded buildings[1,2]; at other times, stampedes can arise during the rush for seats[3,4] or seemingly without cause. Although engi-
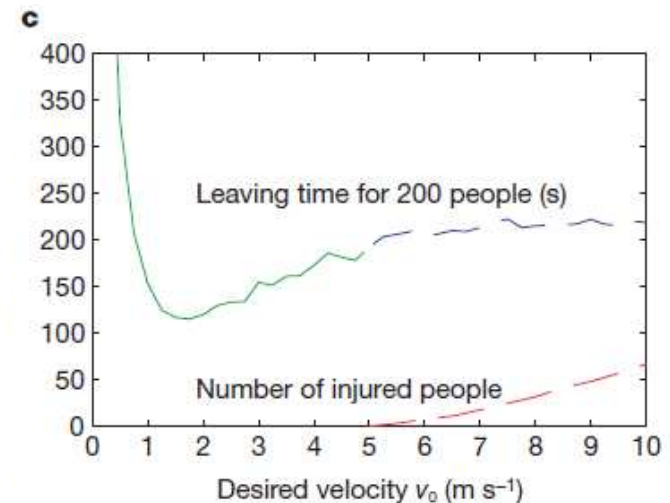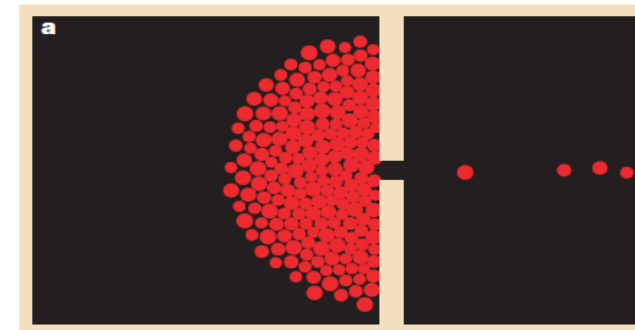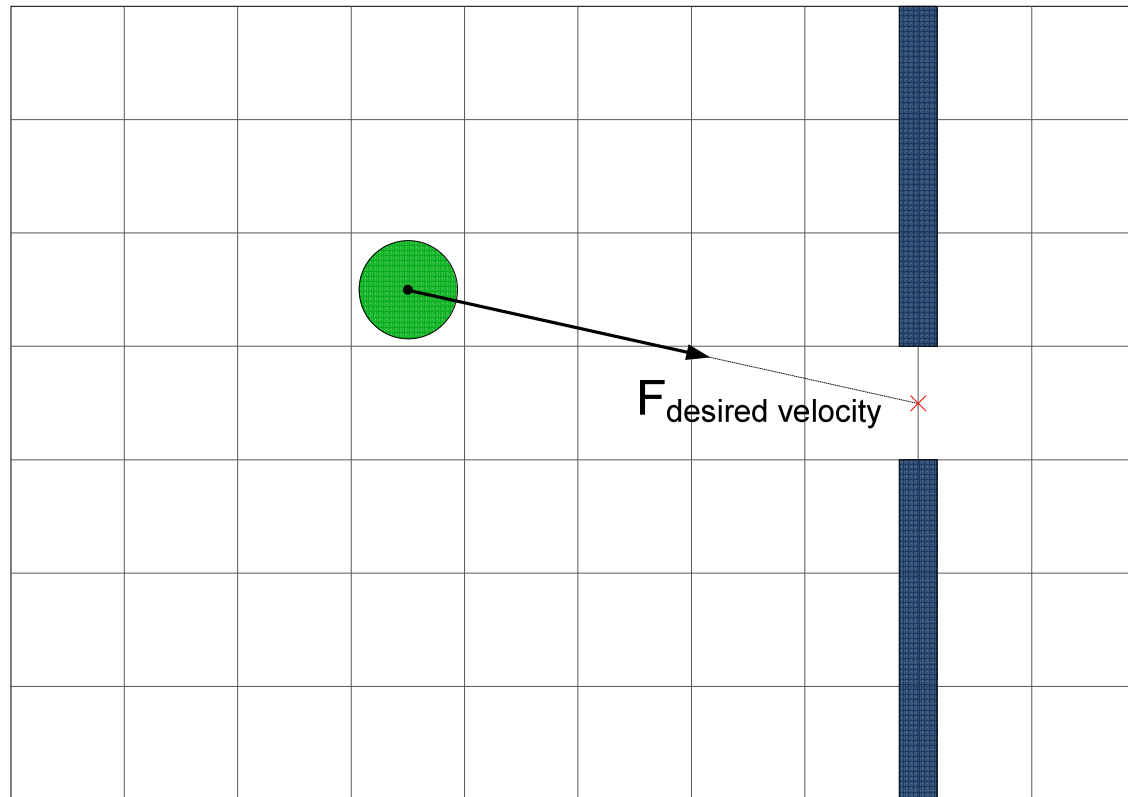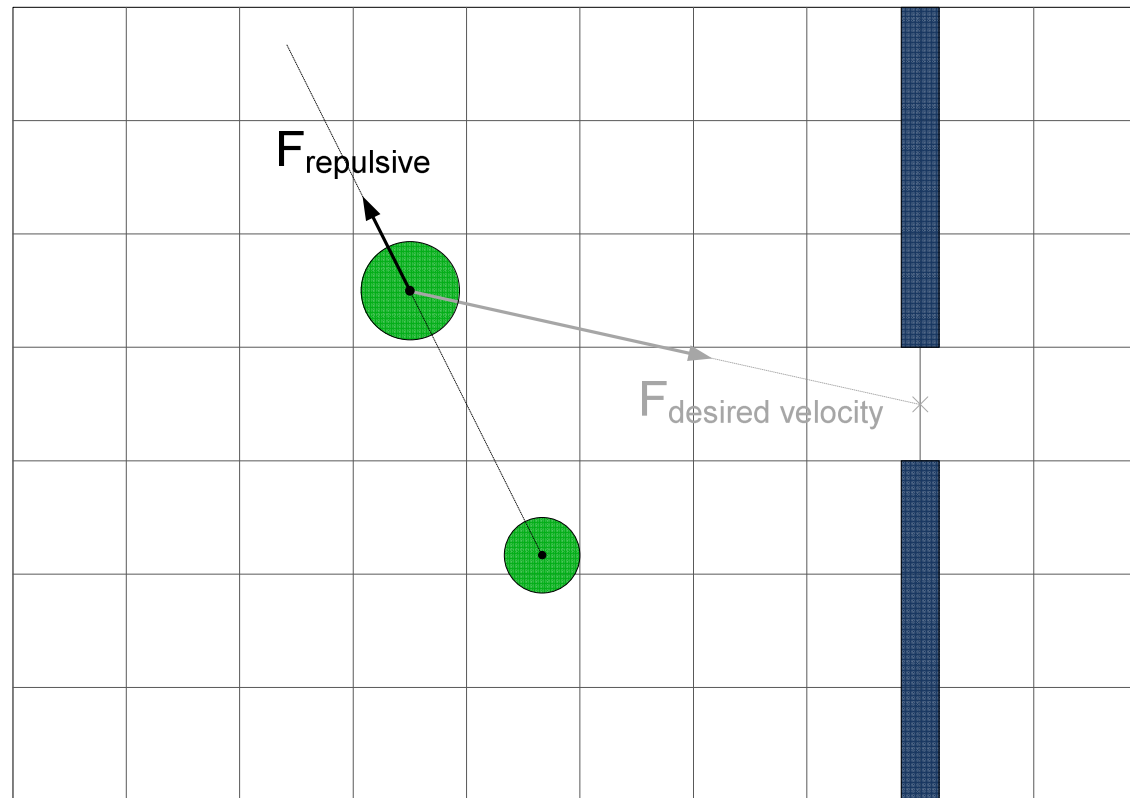
Modeling

playground
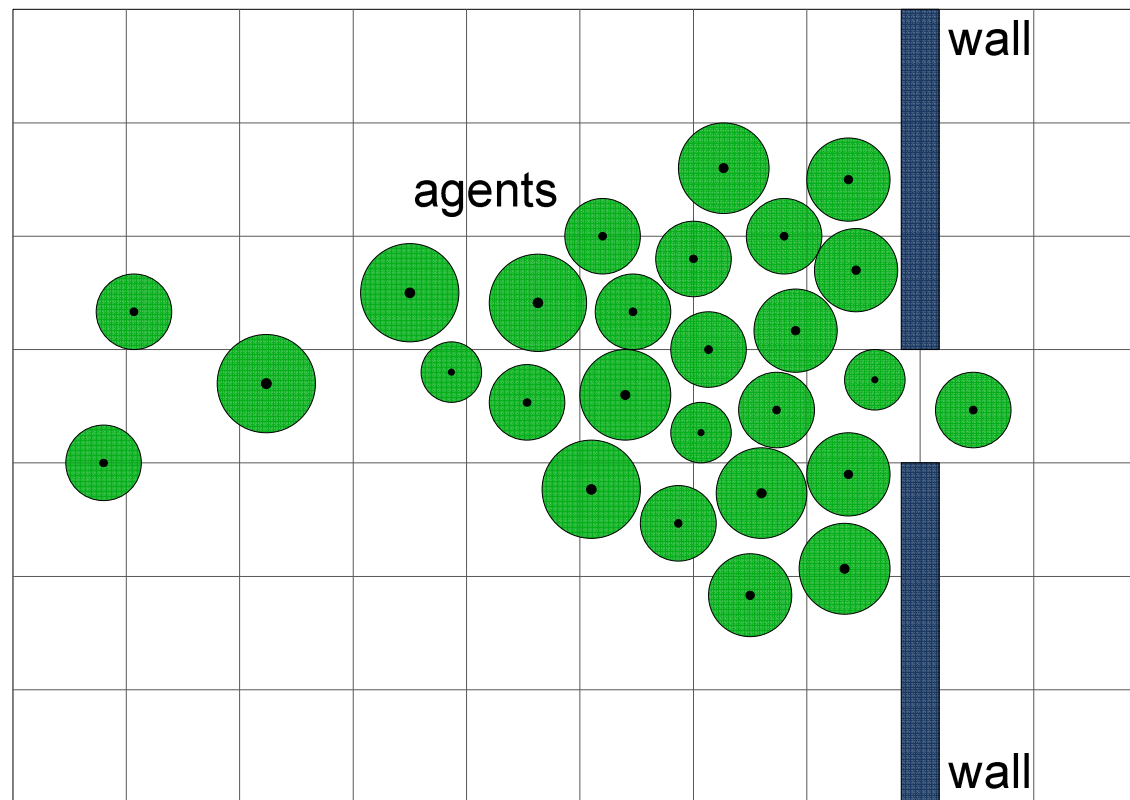
Modeling

forces — desired velocity
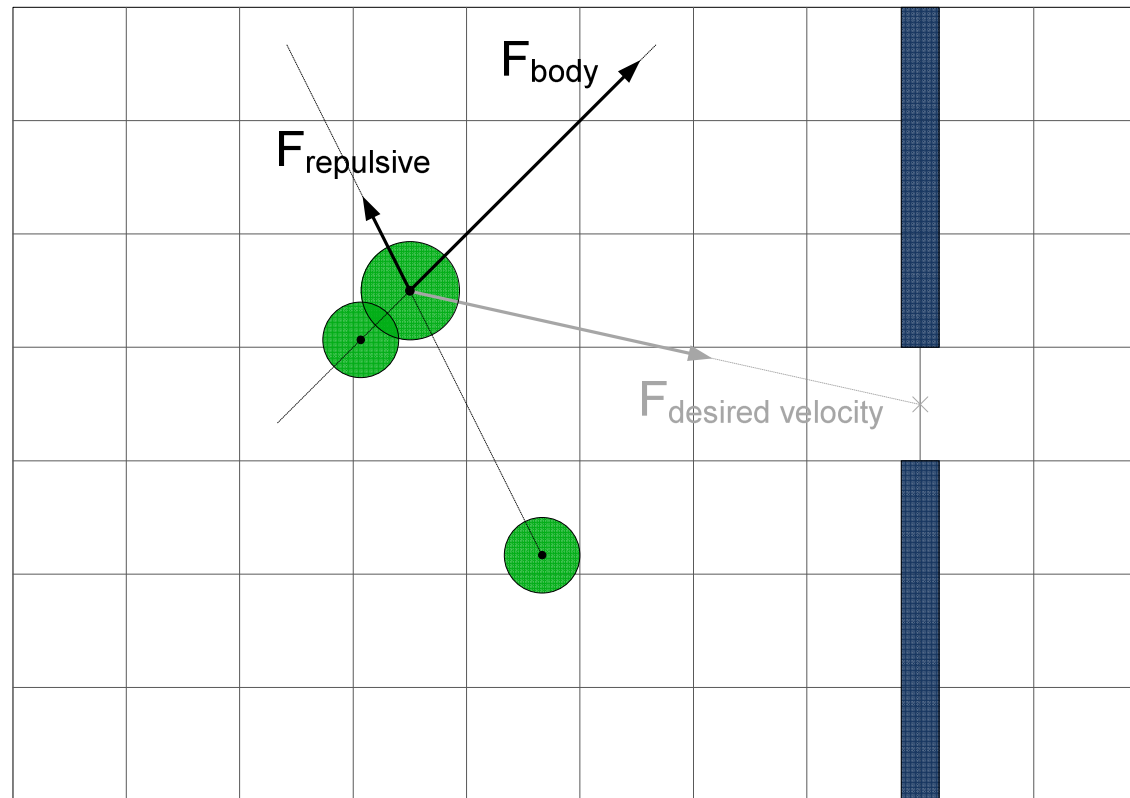
$F_{\text{desired velocity}}$

Modeling

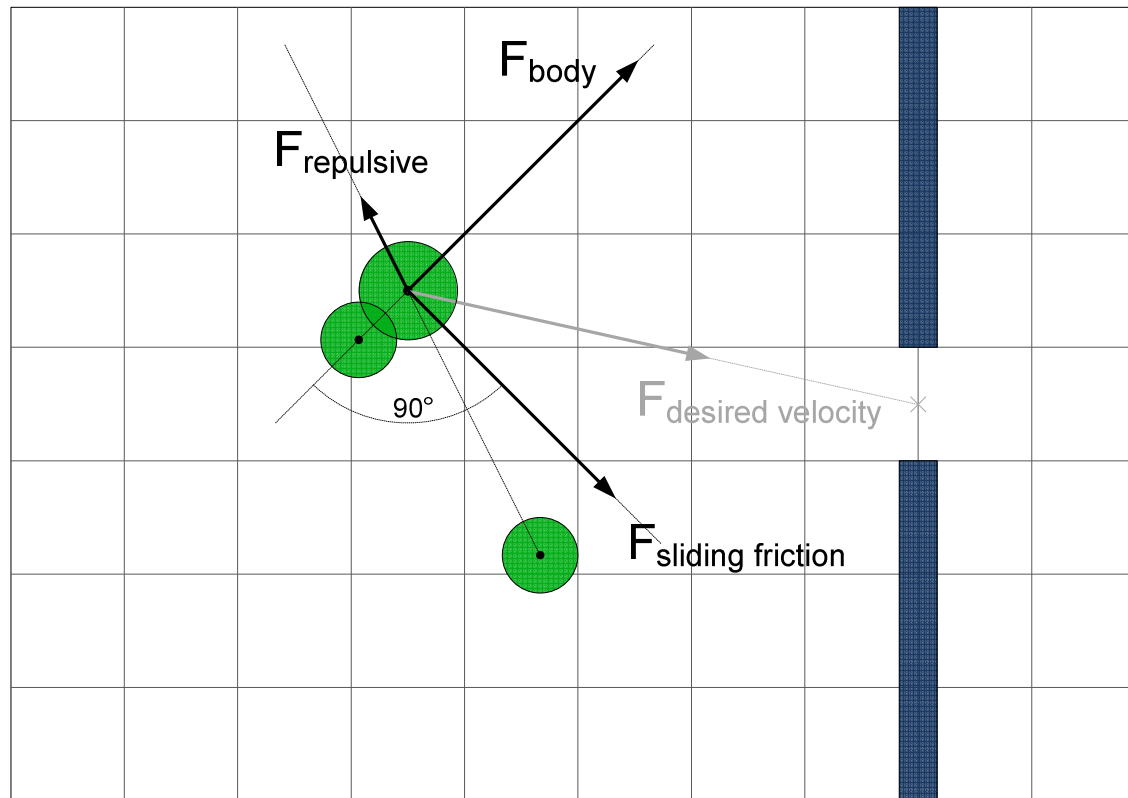forces — agent/agent interaction

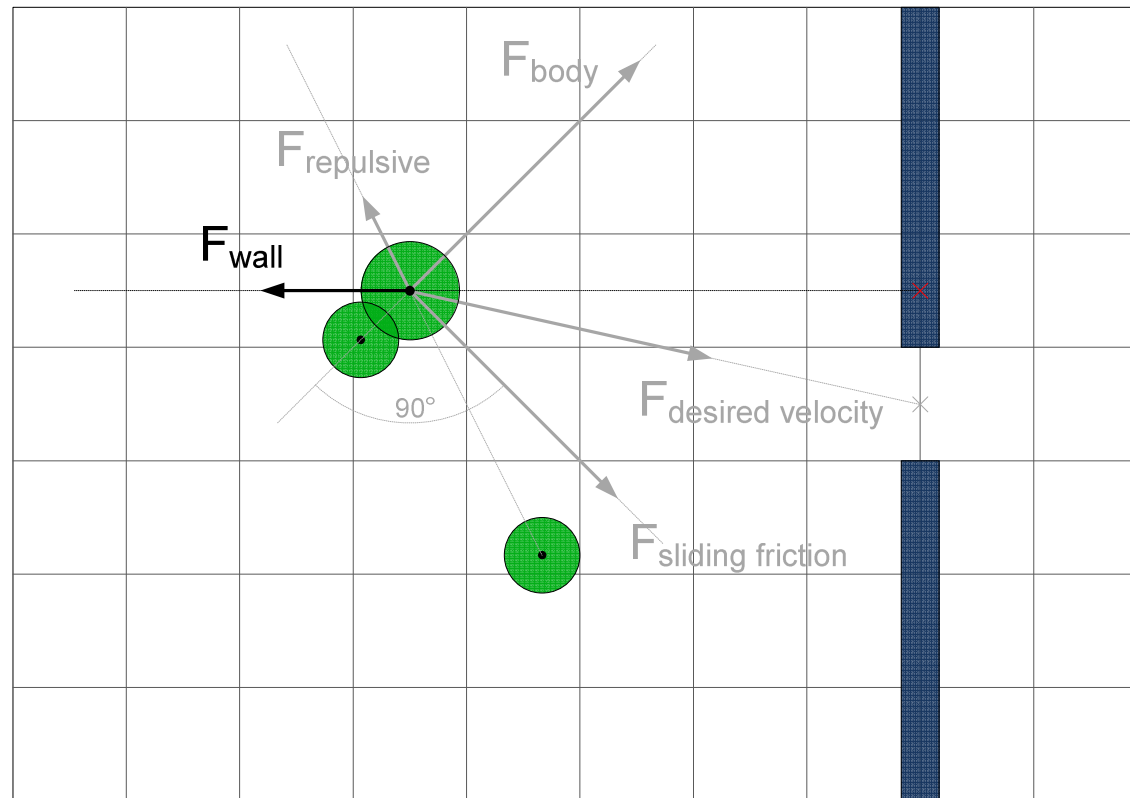# Modeling

forces — agent/agent interaction
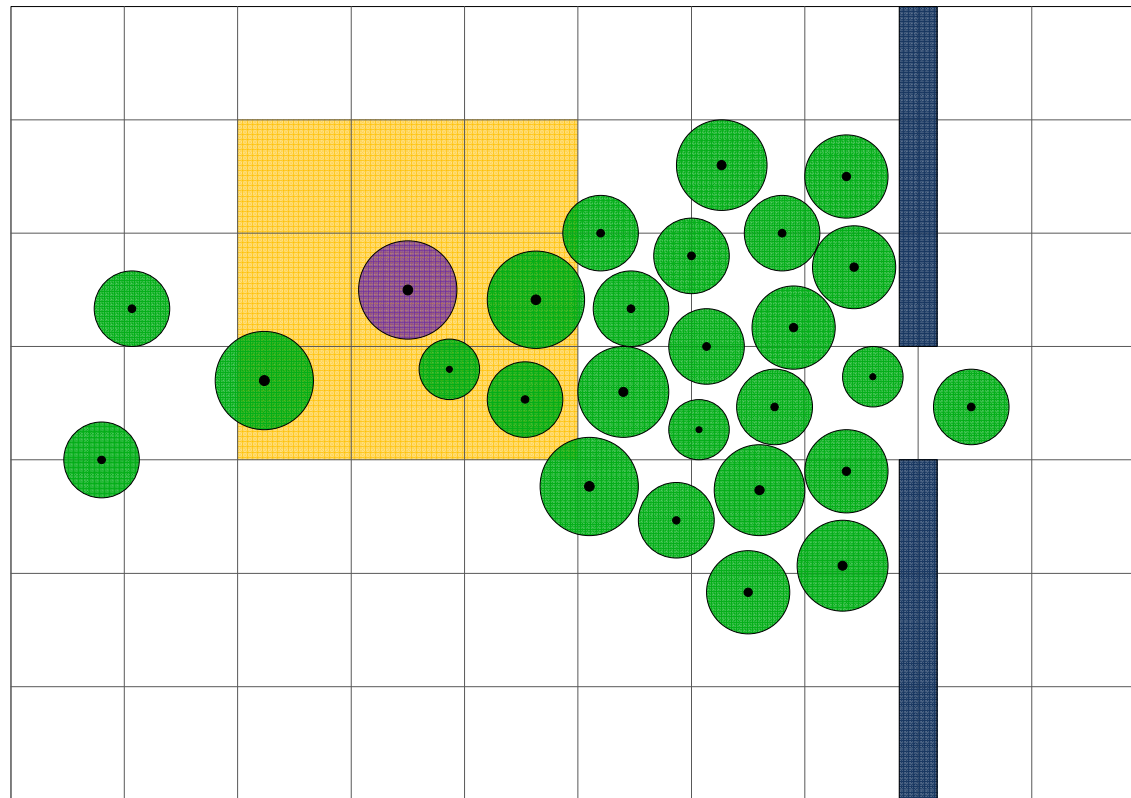
Modeling

forces — agent/agent interaction

Modeling

forces — agent/wall interaction

Computing
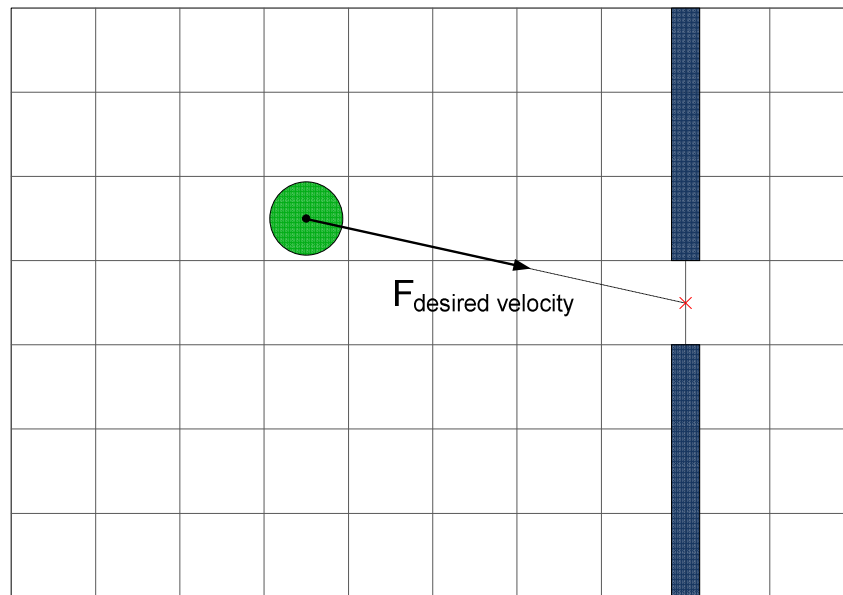
grid vs. N^2

Parameters

desired velocity

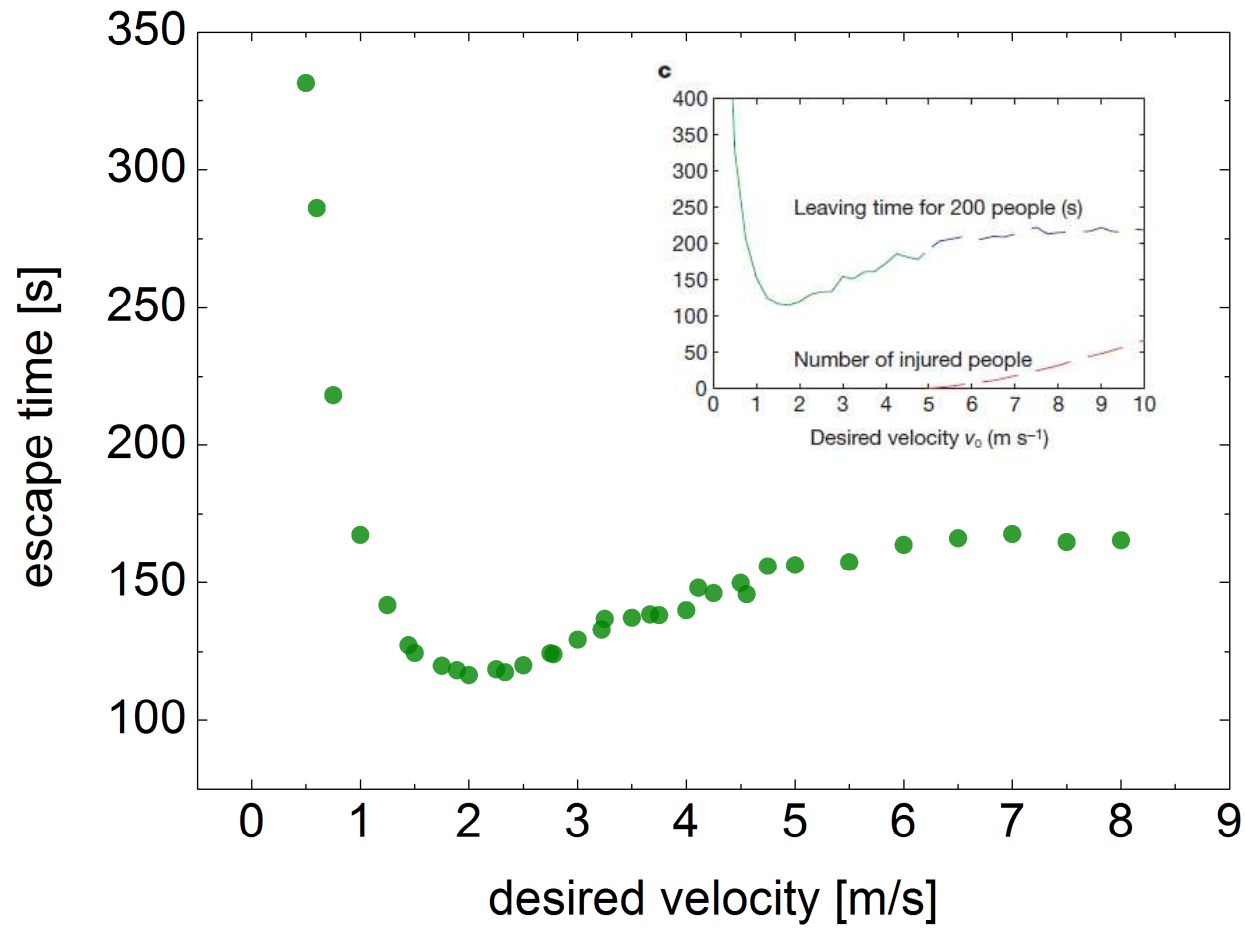$F_{desired\ velocity}$

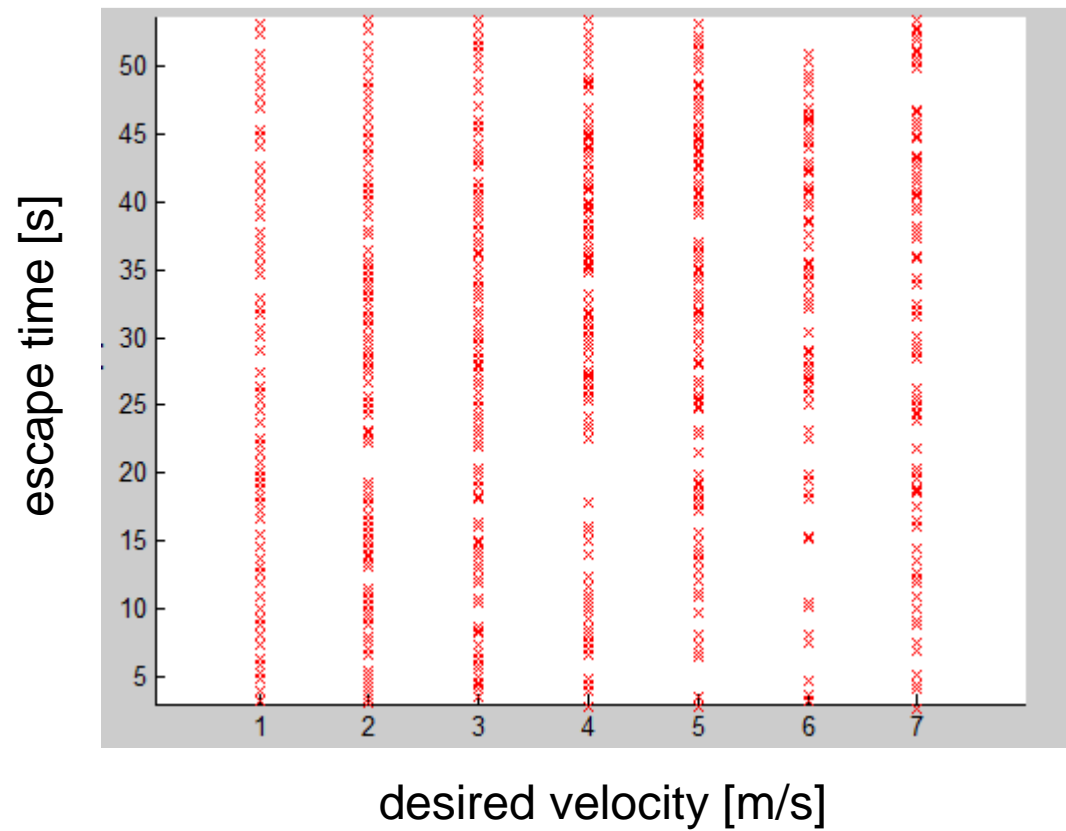### wall angle

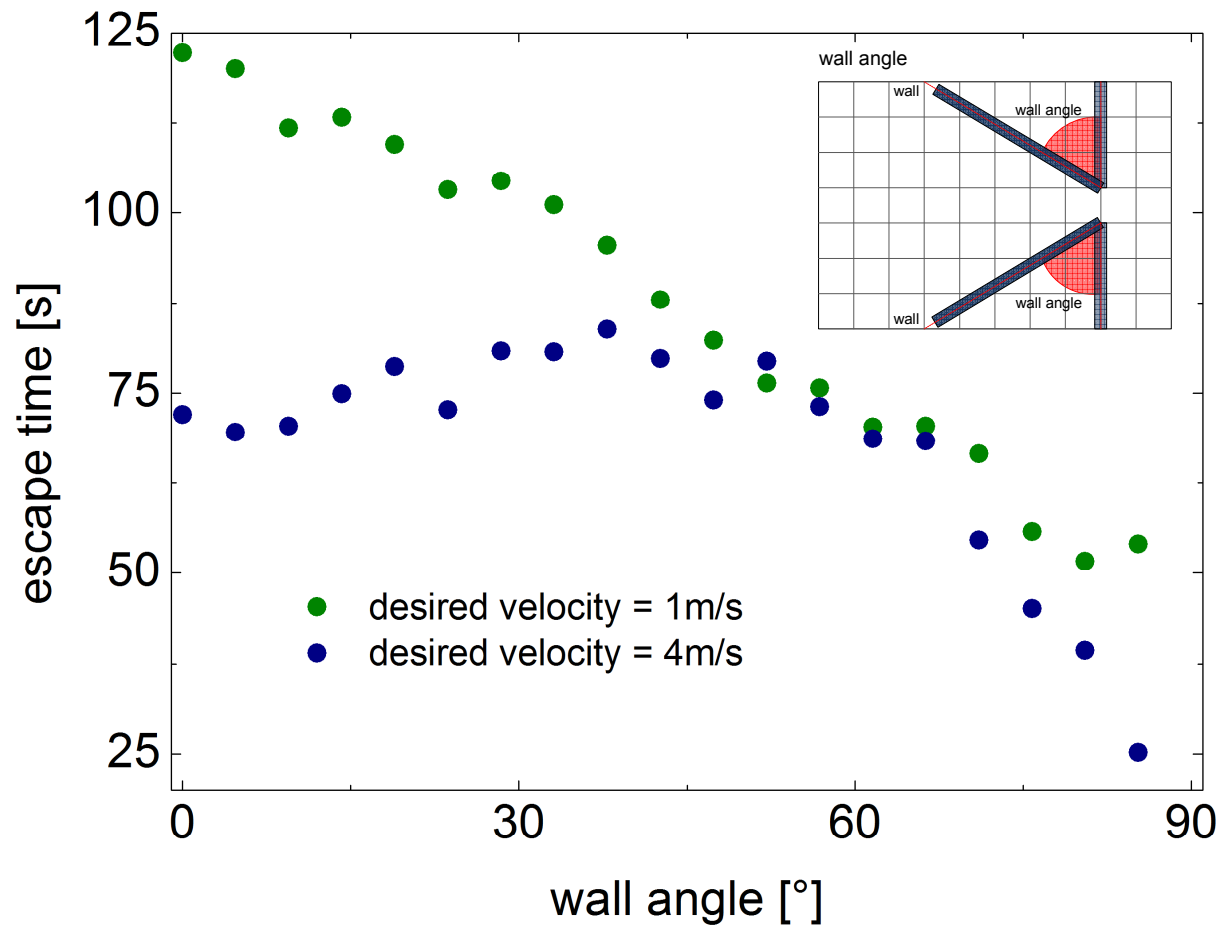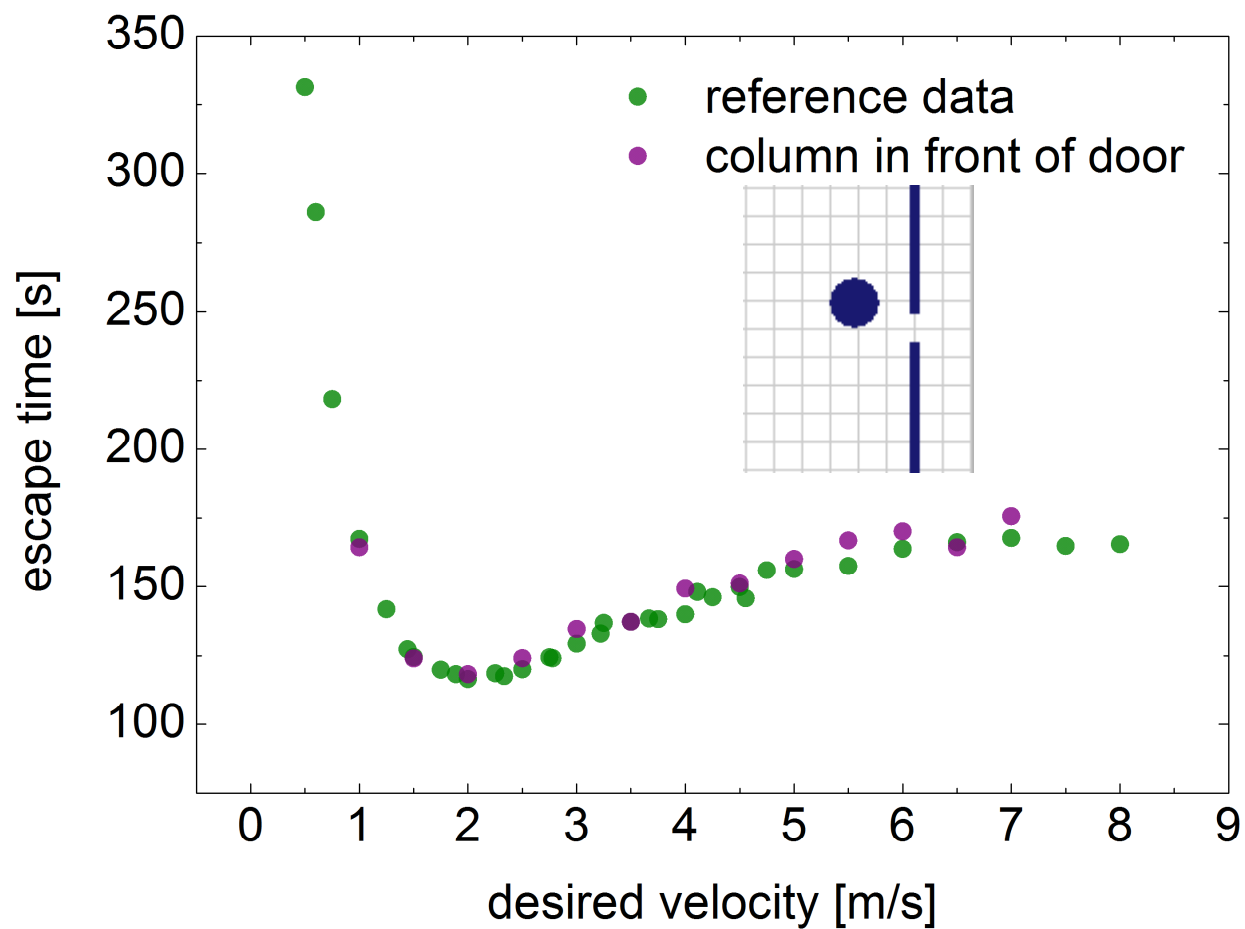

wall

wall angle

wall angle

wall
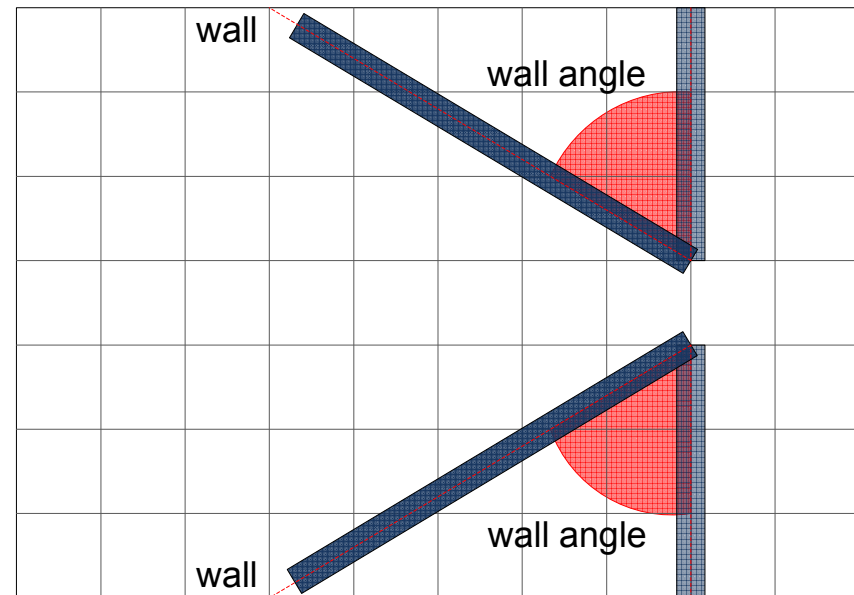
Demonstration

Results

Results
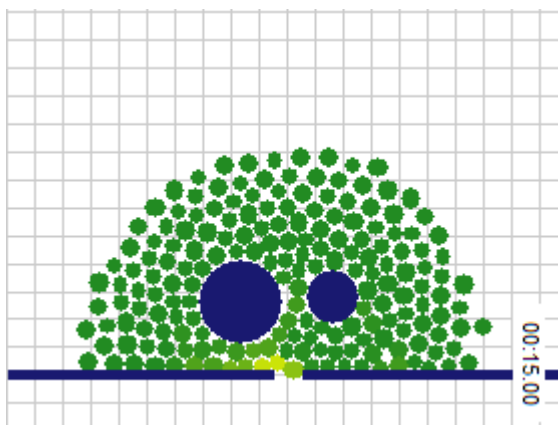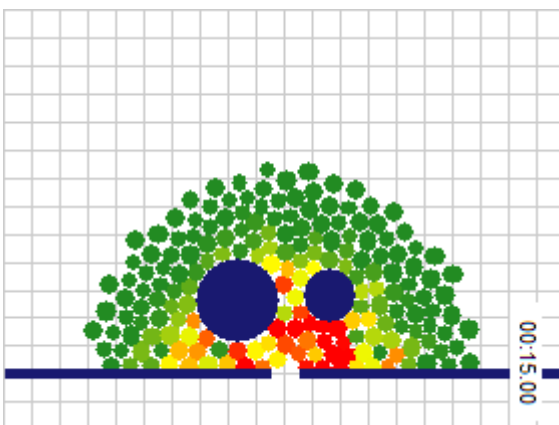

escape time of every agent

Results

Results
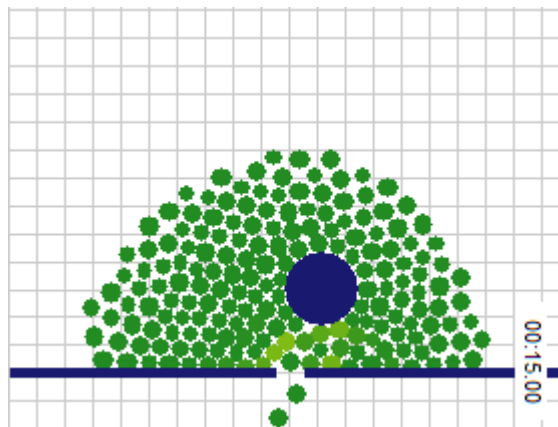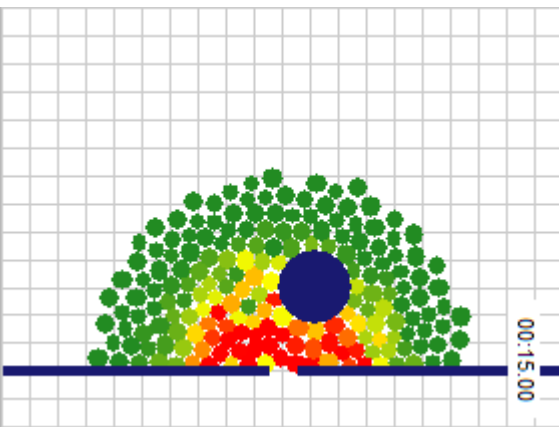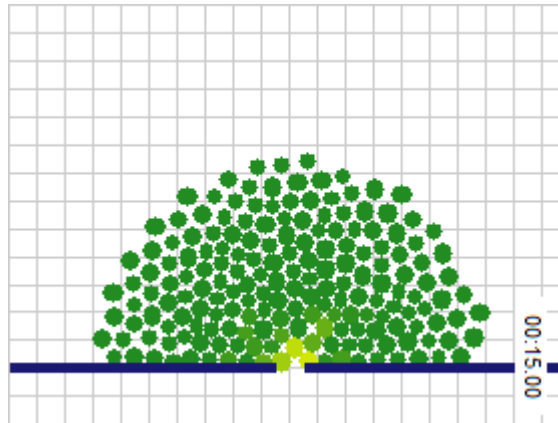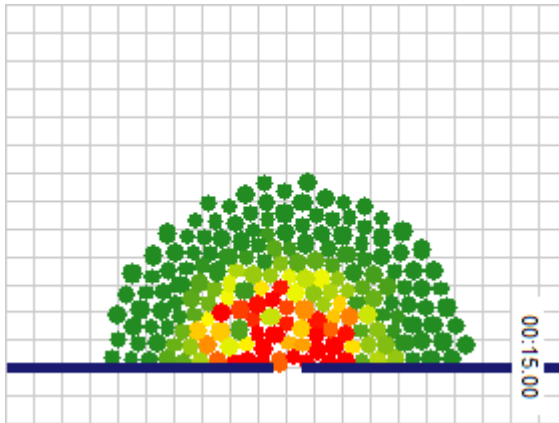
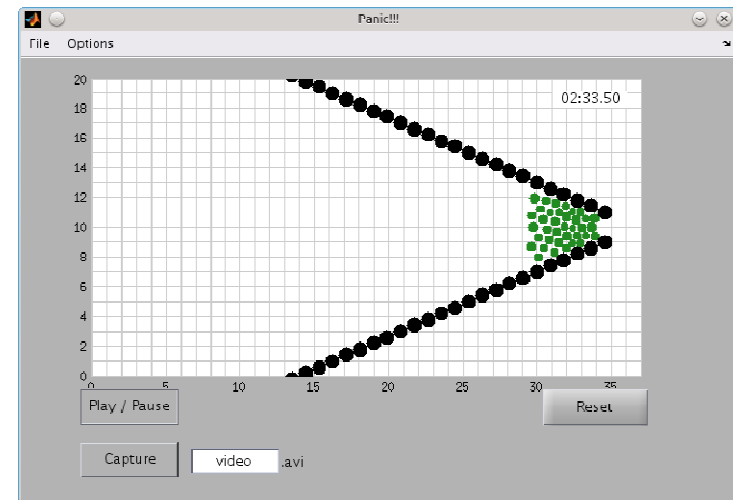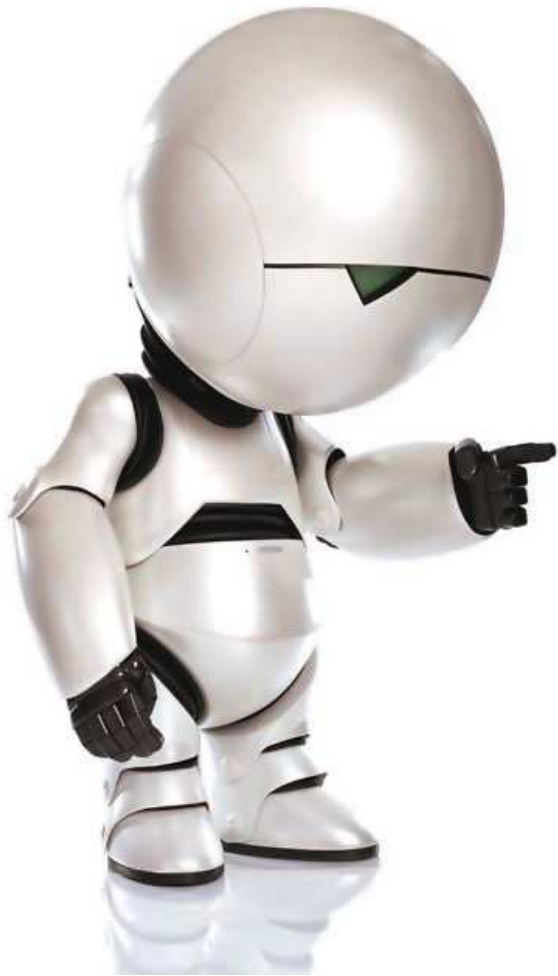desired velocity = 5m/s   desired velocity = 2m/s

Results
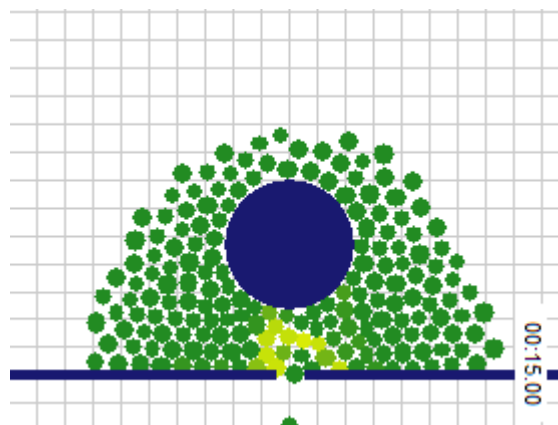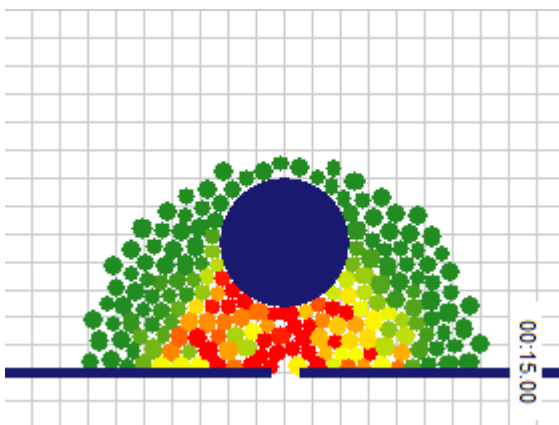
Problems of this model

▣ Pressure to high

▣ Agents can get stuck

▣ Agents can become too weak to get
through door

Conclusion