

Evacuation Bottleneck

Simulating a Panic on a Cruise Ship

Johannes Weinbuch, Benedek Vartok

Outline

Introduction

Our Model

- Input

- Forces

- Filled Exits

Implementation

Results

- Passenger Distribution

- Panic Level

- Summary and Outlook

Outtakes

Our Research Object

- ▶ Costa Voyager
- ▶ Capacity: 836 passengers
- ▶ 8 Rescue Boats
- ▶ In distress at sea in 2005



Source: <http://www.shipspotting.com>,
Picture taken by Roy Batty

The Deck Plan

- ▶ Colormap
 - ▶ Allows any number of zones
- ▶ Scaling
- ▶ Greatly simplified



Source: <http://www.kreuzfahrtberater.de>

- ▶ TODO: config file

- ▶ TODO: desired, agent-, wall-forces

- ▶ TODO: exits

- ▶ TODO: we reused code from Multilevel Evacuation

Distribution of the Agents to the Exits

- ▶ The distribution depends strongly on the geometry of the ship.
- ▶ There was no case where the agents really distributed over the exits
 - ▶ Weakness in the model
 - ▶ More realistic: go for the shortest individual evacuation time

- ▶ TODO: more plots and explanations

- ▶ TODO: tell how good and/or bad we did

- ▶ TODO: MATLAB – how we love it!