



**FACULTY  
OF MATHEMATICS  
AND PHYSICS**  
Charles University

**BACHELOR THESIS**

ME

**Life-like simple particle motion**

Department of Applied Mathematics

Supervisor of the bachelor thesis: SUPER

Study programme: Computer Science

Study branch: General Computer Science

Prague 2021

I declare that I carried out this bachelor thesis independently, and only with the cited sources, literature and other professional sources. It has not been used to obtain another or the same degree.

I understand that my work relates to the rights and obligations under the Act No. 121/2000 Sb., the Copyright Act, as amended, in particular the fact that the Charles University has the right to conclude a license agreement on the use of this work as a school work pursuant to Section 60 subsection 1 of the Copyright Act.

In ..... date ..... ..

Author's signature

Title: Life-like simple particle motion

Author: ME

Katedra: Department of Applied Mathematics

Supervisor: SUPER, Department of Applied Mathematics

Abstract: ABSTRACT

Keywords: keywords more such

# Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
1.1	The primordial particle system . . . . .	2
1.2	Original research . . . . .	2
<b>2</b>	<b>Overview of a new implementation</b>	<b>3</b>
2.1	Overview of “Emergence” . . . . .	3
2.2	Comparison to original research . . . . .	3
<b>3</b>	<b>Implementation of “Emergence”</b>	<b>4</b>
3.1	Main algorithm . . . . .	4
3.2	Data . . . . .	4
3.3	Design . . . . .	4
3.4	Frameworks used . . . . .	4
<b>4</b>	<b>Assessment of “Emergence”</b>	<b>5</b>
4.1	Fidelity to original research . . . . .	5
4.2	Performance . . . . .	5
4.3	User experience . . . . .	5
<b>5</b>	<b>Discussion</b>	<b>6</b>
5.1	Future work . . . . .	6
5.2	Related ideas . . . . .	6
	<b>Bibliography</b>	<b>7</b>
	<b>List of Figures</b>	<b>8</b>
	<b>List of Tables</b>	<b>9</b>
	<b>List of Abbreviations</b>	<b>10</b>

# 1. Introduction

## 1.1 The primordial particle system

## 1.2 Original research

Schmickl et al. [2016]

## **2. Overview of a new implementation**

### **2.1 Overview of “Emergence”**

### **2.2 Comparison to original research**

## 3. Implementation of “Emergence”

3.1 Main algorithm

3.2 Data

3.3 Design

3.4 Frameworks used

## 4. Assessment of “Emergence”

4.1 Fidelity to original research

4.2 Performance

4.3 User experience



## 5. Discussion

### 5.1 Future work

### 5.2 Related ideas

# Bibliography

Thomas Schmickl, Martin Stefanec, and Karl Crailsheim. How a life-like system emerges from a simplistic particle motion law. *Scientific Reports*, 6(37969): 1–15, 2016.

# List of Figures

# List of Tables

# List of Abbreviations

PPS      primordial particle system