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**Thesis**

Submitted to the University of Warwick

for the degree of

**Doctor of Philosophy**

**Mathematics Institute**

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# Acknowledgments

Remember to thank your Mum.

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# Declarations

This work has been composed by myself and has not been submitted for any other degree or professional qualification.

- Chapters 2,3 and 4 present standard theory for BLABLA.
- Part of the work in Chapter X has been published in BLABLA.
- The final section of Chapter X and the whole Chapter X extend significantly the work in BLABLA and will be submitted for publication.
- In Chapter X we apply the analysis scheme developed in BLABLA to another model. The results of this chapter are in preparation for publication.

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# Abbreviations

|         |  |
|---------|--|
| CKE:    | Chapman-Kolmogorov Equation              |
| CTMC:   | Continuous Time Markov Chain             |
| EP:     | Exclusion Process                        |
| HCTMC:  | Homogeneous Continuous Time Markov Chain |
| IP:     | Inclusion Process                        |
| GBE:    | Global Balance Equation                  |
| JV:     | Jensen-Varadhan                          |
| LDP:    | Large Deviations Principle               |
| LDT:    | Large Deviations Theory                  |
| MBQT:   | Many-Body Quantum Theory                 |
| ME:     | Master Equation                          |
| NESS:   | Non-Equilibrium Stationary State         |
| PA:     | Partially Asymmetric                     |
| SCGF:   | Scaled Cumulant Generating Function      |
| SEP:    | Simple Exclusion Process                 |
| SM:     | Statistical Mechanics                    |
| SPS:    | Stochastic Particle Systems              |
| TA:     | Totally Asymmetric                       |
| TPM:    | Transition Probability Matrix            |
| w.r.t.: | with respect to                          |
| ZRP:    | Zero-Range Process                       |

# CHAPTER 1

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## Introduction

See [1].

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## CHAPTER 2

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# Preliminaries

TEST



Figure 2.1: greatest hero

## CHAPTER 3

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# Conclusions

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## APPENDIX A

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# TEST

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# Bibliography

- [1] Bertini, L., De Sole, A., Gabrielli, D., Jona-Lasinio, G., and Landim, C. (2002). Macroscopic fluctuation theory for stationary non-equilibrium states. *Journal of Statistical Physics*, 107(3-4):635–675.