004/150 days -> expected word count 4\*333 = 1332

Thesis – notes

1. **Front pages**

* Title, Name etc.

1. **Abstract**

* Short introduction (SMBHs reside in the centre of most (massive?) galaxies; observational suggestions linking the activity of the black hole with the environment (M-sigma); link to growth of the black hole in the first place and how the angular momentum barrier has not been sufficiently explained so far)
* Outline of what I intend to show in the thesis and give the answer as they will be described in detail in the following chapters
* Outline the method (e.g. smoothed particle hydrodynamics and how the setup helped to solve the above-mentioned problems
* Outline the problems related to simulations and how they were tackled (resolution, inner sink radius, limited physics)
* Outline which parts of the thesis have been published so far (and perhaps which are in prep.)

1. **Acknowledgements**

* Thank the supervisor (for giving me the opportunity of undertaking the work in the first place; giving me insights both into the world of simulations and physics; allowing me to utilise his SPH-code SPHINX)
* Thank the other members of staff (highlight second supervisor)
* Collaborations (probably Martin?)
* Thank Lisa
* Thank the office people, highlight some
* Acknowledge computing facilities like Alice and Dirac plus the funding body STFC
* Thank IT support
* Thank family and Kezi

1. **Contents**

* Abstract; acknowledgements; list of abbreviations without counters; page number in roman numerical
* Introduction; Hydrodynamical simulations; science chapters; overall conclusion; references

1. **List of Tables**
2. **List of Figures**
3. **List of Abbreviations**

**Introduction**

Quote: MISSING

* 1. **Across time and space**

Across time and space human kind have been, are and likely will continue gazing up to the sky and being fascinated by the sparkle that represents both stars close and far, part of clusters and whole galaxies: The Universe itself. But it is not just the ancient light from galaxies far, far away that transcends time and space. Looking back along our own history across the world we discover the sign of said fascination [CITATION NEEDED] that often went beyond mere philosophical (e.g. the Greek philosophers [CITATION NEEDED]) or even religious practices (e.g. Egyptian pyramids positioning [Belmonte 2009]). The Azteks used the perceived changes in position of the stars to guide their harvest [CITATION NEEDED] and sailors operated increasingly complex tools to navigate across the oceans successfully [CITATION NEEDED].

The realisation of its various practical purposes together with the unquenchable desire to satisfy human curiosity has elevated Astronomy from relatively simple observation with the eye (diameter ~ 1cm CHECK!) to telescope projects like the AstronRadio that combine telescope both on Earth and in space into a virtual one that spans the distance between Earth and the Moon (diameter ~350,000km via interferometry [CITATION NEEDED]. Equally the associated techniques have change considerably from incredulous noting down of the observed positions of planets and stars indicated above to the strong predictive power of mathematical theory (e.g. Newton [CITATION NEEDED, Kepler [CITATION NEEDED] or Einstein [CITATION NEEDED]) and simulations solved by huge clusters of computers based on the curious interplay of formulas, observational data