Department of Physics and Astronomy
University of Heidelberg

Bachelor Thesis in Physics
submitted by

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Title

This Bachelor Thesis has been carried out by Sophia Milanov at the
Max Planck Institute for Astronomy in Heidelberg
under the supervision of
Dr. Glenn van de Ven

Abstract

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

This is the second paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

And after the second paragraph follows the third paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

After this fourth paragraph, we start a new paragraph sequence. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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Contents

1 Introduction

1.1 motivation

1.2 What is a globular cluster in the Milky Way?

150 of them
kugelförmige anordnung von Sternen 10**6 bis 10**8
große frage: IMBHs ja/nein
stellar population with plot of cmd (characteristics of each stage) without isochrones
explaining the different evolution stages and binaries included and refer to 3.1.

1.3 Actions&orbits

integral of motion
klarste beschreibung des orbits
actions zeitlich konstant
schon lange sind actions bekannt
auch vom sonnensystem
für andere extrem schwierig zu berechnen
mit supercomputern endlich möglich

2 Method & Theory

2.1 observed kinematics in GCs

2.2 Orbits

Poisson's equation density & potent

2.3 actions

3 Analysis

3.1 Description of the simulation

where simulation comes from and what it is & description of output
x-y-z plot how it looks like
test of sphericity & center
cmd with isochrones explaining them and showing that they fit with the simulation

3.2 Investigation in phase space

Paolo class

3.2.1 Velocity dispersion

aussage
plots
erklärung physikalisch

3.2.2 anisotropy

3.2.3 Density profile

plots
bestätigung kugelförmig
potential daraus

3.2.4 Potential

3.3 Investigations of orbits in action space

wilma class

3.3.1 Orbits

3.3.2 Actions

3.3.3 Integral of motions along orbits

4 Results & Discussion

only triangle plots

4.1 Actions from different globular clusters

4.2 Discussion & future perspectives

do the same distinguishing the mass of the stars
redo the work with only observational light data

5 Conclusion