Effects of Binary Stars on Recovered Remnant Populations in Globular Clusters

by

Peter Smith

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Abstract

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Chapter 1

Introduction

Peter: I'm thinking an intro to globular clusters, then to modelling GCs with discussion of binaries, then to observations of binaries in GC

1.1 Globular Clusters

Globular clusters (GCs) are dense, spheroidal collection of stars bound by their own self-gravity. GCs are found in most galaxies and in the Milky Way are located both in the halo and the disk. GCs typically represent some of the oldest stellar populations in the universe and are usually in excess of 10 billion years old.

Mention mass segregation

1.1.1 Binaries in Globular Clusters

Mention why we expect binaries in GCs to be different from field binaries. (cite a field binary and GC binary paper here)

Some dynamical effects of binaries, mention that we're focusing on hard binaries that we can treat as point masses, not so much the long-period binaries that provide significant energy through hardening during interactions.

1.1.2 Observations of Binary Stars in Globular Clusters

Main sequence photometry Milone et al. (2012)

Radical Velocity Searches Giesers et al. (2019)

Time-Series Photometry Albrow et al. (2001)

1.2 Modelling Globular Clusters

1.2.1 Evolutionary Models

N-body (Nobody6 ref? Maybe just a Baumgardt ref?)

Monte-Carlo, (CMC Rodriguez et al. (2021)) (MOCCA Hypki and Giersz (2013); Giersz et al. (2013))

1.2.2 Equilibrium Models

Jeans Models (maybe a Sollima or Watkins ref?)

DF models (LIMEPY Gieles and Zocchi (2015))

Chapter 2

Methods

Chapter 3

Results

Chapter 4

Discussion

Appendix A

Appendix

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