Cooling Clouds by Varying Metallicities: Origin of Globular Cluster Bimodality

Ricardo Fernandez[1] and Greg L. Bryan[1]

[1] *Department of Astronomy, Columbia University, 550 West 120th Street, New York, NY 10027, USA*

ABSTRACT

Globular Clusters

Key words: globular clusters - methods:numerical

1 INTRODUCTION

2 BASIC IDEA

3 NUMERICAL MODELS

3.1 Numerical Method

This simulations were performed with the publicly available Eulerian three-dimensional hydrodynamical adpative mesh refinement Enzo code (The Enzo Collaboration et al. 2013). The domain box size of the simulation was 150 pc with a top level root grid resolution of 128^3. Cell refinement was dictated by baryon mass and Jeans length with a maximum refinement level of 3. Our simulations included self gravity and radiative cooling using the Grackle library; details described in The Enzo Collaboration et al. (2013). The metal heating and cooling rates are provided from Haardt & Madau (2012).

3.2 Initial Conditions

4 RESULTS

4.1 No Heating Runs

4.2 Heating Runs

5 DISCUSSION

5.1 Analytic Model

5.2 Implications

5.3 Caveats

6 SUMMARY

ACKNOWLEDGMENTS

REFERENCES

Haardt F., Madau P., 2012, ApJ, 746, 125
The Enzo Collaboration et al., 2013, ArXiv e-prints