

Models of Stellar Evolution (Need New Title)

A Thesis Proposal

Submitted to the Faculty
in partial fulfillment of the requirements for the
degree of

Doctor of Philosophy

in

Physics and Astronomy

by

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May 10, 2022

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The equations of stellar structure have proven astonishingly predictive when describing stars interior structures. In their most basic form they constitute 4 ordinary, first-order, differential equations. However, they are not on their own well enough constrained to solve. In addition to the four ODEs, an equation of state, thermal conductivities, nuclear reaction rates, and opacities are all required when modeling a star. Some of these additional constraints can be computed on the fly; however, as yet there is no effective way to compute opacities at run time. Rather, stellar structure programs use pre-tabulated opacities over a range of temperatures, densities, and chemical compositions. The Dartmouth Stellar Evolution Program (DSEP) has used OPAL opacities for the last decade and a half; however, there are now more up to date elemental opacity tables from OPLIB. Moreover, OPAL opacities can no longer be reliably generated for different chemical compositions. Here we present an overview of how we update DSEP to use opacities from OPLIB in addition to preliminary results from two studies making use of these updated opacities.

1. INTRODUCTION

Blah Blah Blah

This research has made use of NASA’s astrophysical data system (ADS). We acknowledge the support of an NASA grant (No. 80NSSC18K0634). Additionally, we would like to thank James Colgan for his assistance with the OPLIB opacity tables. We would like to thank Aaron Dotter, and Elisabeth Newton for their assistance. Finally, we thank our colleagues and peers in for their continuing and appreciated support.