

The WISE-*Gaia* Perspective on Massive Stars: Classifying IR Variability Across the Upper HR Diagram

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ABSTRACT

Massive Stars are really cool! *Gaia* can help us find them. Optical + IR diagnostics are useful for classifying them. WISE gives us awesome variability stuff. We can do some machine learning.

Keywords: stars: massive

1. INTRODUCTION

This is the introduction. We introduce massive stars, and how their interiors and exteriors evolve. We discuss how that information is encoded into variability. Rotation, mass loss, etc. We discuss the IR. We discuss why WISE+*Gaia* =< 3.

The paper is laid out as follows: we describe our sample selection using the *Gaia*DR2-WISE crossmatch in §2. We discuss our analysis of the WISE lightcurves in §3. Our results examining both the coadded *Gaia* and WISE data and time-resolved WISE lightcurves are shown in §4. We discuss the implications of our results in §5 before concluding in §6.

2. SAMPLE SELECTION

3. LIGHTCURVE ANALYSIS & FEATURE EXTRACTION

4. RESULTS

4.1. Photometric Diagnostics

4.1.1. Distinguishing Between RSGs and AGBs

4.2. Variability

4.2.2. Machine Learning

5. DISCUSSION

6. SUMMARY & CONCLUSION

This work made use of the following software:

Update this

Software: Astropy v2.0.3 (Astropy Collaboration et al. 2013; The Astropy Collaboration et al. 2018), FATS, Matplotlib v2.1.2 (Hunter 2007), makecite (Price-Whelan et al. 2018), NumPy v1.14.1 (Van Der Walt et al. 2011), Python 3.5.1

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doi: [10.1051/0004-6361/201322068](https://doi.org/10.1051/0004-6361/201322068)

4.2.1. Raw Feature Results

Hunter, J. D. 2007, Computing In Science & Engineering, 9, 90

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