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Spectroscopy of HD 68695 with The Southern African Large Telescope

The target star of this research, HD68695, has characteristics of a young star with its age estimated to be about 7.3 million years by Arun et al. 2019. Murphy et al. 2020 observed strong emission in H- β , concluding that HD 68695 did not appear to be a λ -Böötis star and therefore its membership in the class was uncertain. Furthermore, Murphy et al. 2020, and Medupe et al. (2019) using Mahikeng Astronomical Observatory (MAO) data and Kilodegree Extremely Little Telescope (KELT-South) data have shown that HD 68695 pulsates with a period of 23 min. This is on the longest part of the roAp star pulsation period range, and on the shorter part of the δ -Scuti range. Murphy et al. 2020 claims this star is a pulsating λ -Böötis star. A criterion for the λ -Böötis classification is that a star must be within a spectral type range A, to F with metal deficiencies. Stars with weak Mg II (at 4481 Å) lines, such that the ratio of Mg II (at 4481 Å)/Fe II (at 4383 Å) is significantly smaller than in normal stars. Murphy, Corbally et al. 2015; Cheng et al. 2019 showed that the ratio of Mg II (at 4481 Å)/Fe II (at 4383 Å) lines for stars with an 8000K suffices as a visual classification technique for the identification of λ -Böötis stars, as it was used to discover and confirm λ -Böötis stars in their respective studies. We obtained high resolution spectrum of HD 68695 using SALT HRS in October 2024. We present an analysis of this spectrum to show you some interesting features and some spectral fitting to some of the lines. We aim to perform detailed abundance analysis so that we can confirm if classifying this star as a pulsating λ -Böötis star is correct.

References

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