

Stars have always fascinated human, but we still don't fully understand how they work inside. One group of stars called Am stars is particularly puzzling. They have unusual chemical compositions and can pulsate. By studying these peculiar stars, we can learn more about their structure and evolution.

Am stars spend most of their lives as Main Sequence stars, like a normal star. However, inside these stars, there are complicated processes like diffusion, convection, and rotation that affect the chemicals in their atmospheres. They are like a special laboratory for scientists to investigate how atomic diffusion, rotation, pulsation, magnetic fields, and being in a binary system are all connected. Understanding these stars not only helps us understand how stars change over time but also tells us more about how chemicals evolve in our galaxy.

Scientists have been trying to answer questions about Am stars for a long time. Why do only some Am stars pulsate? What makes them different from Am stars that don't pulsate? Do things like temperature, rotation, and being in a binary system affect pulsation? Recent observations suggest that pulsating Am stars are mostly found within a specific temperature range. However, we still don't know exactly how atmospheric properties, chemical abundance, rotation, being in a binary system, and pulsation are related.

In this project, we aim to uncover the secrets of Am stars through a detailed investigation. We will use spectroscopic analysis and time series photometric data. By doing this, we hope to confirm existing ideas and discover new connections. We want to figure out the differences in chemical composition among Am stars, understand how they pulsate, and study their overall chemical makeup.

Studying the light from Am stars in detail takes a lot of time and effort, but it gives us very precise information about their atmospheres. By analyzing the light from many Am stars, we can learn more about their unique characteristics. Combining this information with data about how their brightness changes over time will help identify more pulsating Am stars and give us a better understanding of how they work.

This research is not just important for understanding stars. By studying a large number of Am stars and updating our knowledge about them, we can also learn about other physical processes, like how gravity interact with radiation.

By using different approaches, we hope to help in uncovering the mechanisms behind the pulsation of Am stars. Their discoveries will not only improve our knowledge of the universe but also inspire new questions and take us further in understanding how stars change over time and how chemicals move in our galaxy.