

## Kicking and Screaming Baby Stars: An Overview of Star Formation Research

One of the most fundamental questions that humans long to discover is: where did we come from? In order to provide the insight needed to answer this question, astronomers investigate the processes occurring within our universe, such as the formation of planets, stars, solar systems and galaxies, so that this puzzle can be pieced together. Since stars are so fundamental to our existence, they serve as a natural starting place for this investigation. For this reason, my research involves characterizing the earliest stages of the process that forms new stars within our galaxy.

Stars are born inside massive clouds of gas and dust throughout space that are called dense cores. When these cores gain enough mass, they begin to collapse and a new star can be formed out of the compacting material. The speed of this collapse can be observed using the light emitted by the gas particles moving inside the core. Based upon the shape of the light intensity pattern that we observe at a given position, the velocity of the particles at that particular point can be determined. The overall collapse speed of the core can be measured by obtaining light intensity patterns at multiple positions along the face of the core.

Our results suggest that the collapse of dense cores is fastest toward the center and slower on the outer regions. After stars “turn on” inside the core, we see that they shoot gas and dust away from the center causing significant turbulence patterns. Much like a newborn baby, these young stars cause unrest in their surrounding environment, making their presence known in a forceful manner.

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