

Sequential star formation in Cassiopeia

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Abstract

Massive stars ($M \geq 9 M_{\odot}$) are usually formed in OB associations, consisting of one or more not very massive open clusters and a halo of scattered young stars. The study of these open clusters can provide clues about how stellar formation proceeds from the parent molecular clouds. We present first results on a project to understand sequential star formation mechanisms in OB associations. We have chosen associations Cas OB4, Cas OB5 and Cas OB7, close to the Cassiopeia constellation, at $l = 110^{\circ} - 125^{\circ}$. Previous determinations of their distance provided very similar values for them all, and placed them on the Perseus Arm.

This study aims at improved distance and age determinations using new spectroscopic observations and existing photometry. The goal is to investigate whether the clusters in Cas OB4, Cas OB5 and Cas OB7 are separate entities or can be enclosed in a global common OB association. If associated, we will check for evidence of induced star formation.

We preselected about 100 stars from 12 clusters, based on photometric criteria. Long-slit spectra were taken with the Intermediate Dispersion Spectrograph at the Isaac Newton Telescope (2.5 m), located in La Palma's Observatorio del Roque de los Muchachos. We used the R632V grating, to achieve a spectral coverage between 3500 Å and 5500 Å and spectral resolution of 0.90 Å px⁻¹. The observed spectra have been used to determine the spectral type and luminosity class of the sample stars. The spectral classification yields the stellar properties (from calibrations), and will enable the reconstruction of the HR-diagram. We present in this poster newly discovered B-type stars in two selected clusters.