

Narrow Band Nebular Photometry and High Resolution Analysis of the Spectral Sequence

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In this study, we report on a combination of narrow band photometry and medium and high resolution spectroscopy to investigate the bright supernovae remnant (NGC 1952), as well as the elemental composition and basic physical parameters of a selection of bright stars. Supernovae and stellar nucleosynthesis account for most of the diversity and dispersion of elements in the universe. Narrow band imaging and photometry was performed of the Crab Nebula (NGC1952) supernova remnant, to investigate its expansion rate and energetics. Medium resolution spectroscopy of 12 stars from the spectral sequence O-M was performed, yielding the characteristic spectral differences that define the spectral sequence. Additional physical properties were characterized through high resolution spectroscopic analysis of the eclipsing binary system, beta Aurigae, including radial velocity and mass. We discuss the accuracy to which such analyses can be performed using spectroscopic and photometric equipment accessible to a small university observatory.