

on 2MASS images was carried out for populous clusters younger than approximately 100 Myr and whose ages are available. The integrated magnitudes and colors extracted from the surface photometry showed the same bimodal distribution in  $JHK$  diagrams as that found for more distant galaxies, suggesting that the phenomenon is universal. We confirm the index  $Q_d$  as a powerful tool to distinguish clusters younger than about 7 Myr from older clusters.

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#### MAPPING OF THE PHYSICOCHEMICAL CONDITIONS OF THE PLANETARY NEBULA MENZEL 1

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We present a study of the physicochemical conditions of the planetary nebula Menzel 1 using the method of spatially resolved spectrophotometric mapping. The data used in this study were collected in the Cerro Tololo Inter-American Observatory (CTIO) 0.9 m telescope. Observations were made with traditional long-slit spectroscopy with exposures taken for multiple parallel positions along the object in order to map it. The separation of the 4" slits were of 4". Initially, a data cube was created with the spectra obtained for each position of the slit. We used MPFIT - a software package that aims to find parameters that best fit the data to a function - to fit gaussians to the emission lines observed in each pixel of the spatial direction, for each slit in the data cube. We then reconstructed the image of the nebula for each a given emission line extracted from the data cube, interpolating between observed slit positions. With these maps, we obtained the interstellar extinction from the  $H\alpha/H\beta$  ratio pixel by pixel. We obtained the density map from the [SII]671.7nm/673.1nm ratio and the temperature map from the [NII](654.8+658.4)nm/575.5nm ratio. Using the code NEAT (Nebular Empirical Analysis Tool), the maps of the chemical abundance were calculated from the flux maps. These maps provide a spatially resolved overview of the physicochemical conditions found in this object. From the maps,

we calculated mean values for the main diagnostics, which compared well with values from the literature, showing that we retrieved results from observations without spatial resolution. This method allows the study of planetary nebulae in more detail than conventional methods.

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#### MODELING BLUE HORIZONTAL BRANCH STARS

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The stars of the Blue Horizontal Branch (BHB) are characterized by having being through most of their evolutionary process and lost part of their external layers, leaving only a thin layer of hydrogen and a burning Helium nucleus. This makes these stars very blue and hot, although old. They are present in many stellar population systems (e.g. stellar clusters and elliptical galaxies), and their presence can induce errors in the age determination of these objects using integrated spectra. The stellar population analysis technique using integrated spectra is a very powerful tool nowadays, however stellar population models do not account for the BHB stars. Because of that, the presence of these stars induces to the determination of younger ages than expected for these systems. In this project we will create synthetic spectra for the BHB stars that can be incorporated to the stellar population models to be used in spectral synthesis. Here we present a study of the atmospheric parameters of these stars that will be used to create the synthetic spectra.

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#### ACCRETION DISC MAPPING OF THE SHORTEST PERIOD ECLIPSING BINARY SDSS J0926+36

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