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THE PECULIAR OBJECT He2-104

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He2-104 is an emission-line object classified as a symbiotic system or as a planetary ebula, following different authors. More recently, CCD images taken through narrow filters entered in Hα, [N II], and [S II] indicate a bipolar morphology.

We have secured spectra of this object since 1986, as part of a program on southern ymbiotic stars. The observations were made with a Cassegrain spectrograph attached to the 1.6 m elescope of the National Laboratory for Astrophysics, in Brasopolis, Brazil.

From the observed Hα/Hβ and Hγ/Hβ ratios, we derived a color excess of E_{B-V} = 1.3 .

In order to derive the physical conditions in the emitting region, we have at our isposal the following line ratios: [S II]λ6717/λ6730; [O II]λ3728/λ7324; [N II]λ5754/λ(6548+6584); O III]λ4363/λ(4959+5007). The curves of same line intensity ratio do not define a common region n the log n_e - log T_e plane, which suggests that the emitting gas is not uniform and the lines f ions of different excitations are formed in regions with distinct electron densities.

The electron temperature was estimated using the [C III]λ1909 intercombination doublet nd the recombination line C II λ 4267, However, instead of deriving the relative intensity to espect Hβ using absolute fluxes, we first calculate the IUE fluxes to respect HeIIλ1640 and caled them to Hβ considering the ratio HeII λ1640/ λ4686 = 6.8 from a pure recombination theory. ith this procedure we obtained an electron temperature $T_e \sim$ 10000 K. Taking into account the ncertanties in the intensities of the lines, we cannot exclude a higher temperature and alculations using T_e = 12000 K will be also presented in order to verify the consequences of rrors in the eletron temperature.

Once the electron temperature is known, it is possible to estimate the electron ensity prevailing in the region where a given ion is formed using the above mentioned line atios. The results are:

Ion	T_e = 10000 K	T_e = 12000 K	log I (eV)
[S II]	6300	6300	1.015
[O II]	1.4×10^4	1.0×10^4	1.134
[N II]	2.0×10^5	1.2×10^5	1.162
[O III]	8.4×10^6	3.5×10^6	1.545

To estimate the characteristic electron densities in the region where the ions Ne^{+2}, e^{+3}, S^{+2}, Ar^{+2}, Ar^{+3}, Ar^{+4} are dominant, we have used the correlation between the electron ensity and the ionization potential of the precedent ion derived from the results given above.

In order to derive the ionic abundances in such a stratified medium we used the tatistical equilibrium equations; the density for any given ion is obtained from the correlation bove mentioned. Once the ionic abundances are calculated, the elemental abundances can be btained applying the ionization correction factor.

The final results for the abundances are:

Ratio	T_e = 10000 K	T_e = 12000 K
N/O	0.11	0.16
S/O	0.015	0.019
Ne/O	0.30	0.32
Ar/O	0.0014	0.0016
C/O	0.86	0.60

Our results then suggest an important density stratification throughout the nebula, with values ranging from 6×10^3 cm^{-3} up to 8×10^6 cm^{-3}. The analysis of our data indicates no important enrichment either of He or N.

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