PLANETARY NEBULAE IN THE LARGE MAGELLANIC CLOUD

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By means of the code DIANA v1.5 (Elizalde 1995) 32 PN of the LMC (4 Type I) were modelled. The data are from Monk et al. 1988 (MBC), and Meatheringham & Dopita 1991a,b. We obtained the physical parameters (luminosity, temperature, gravity, density, radius, optical depth, ionized mass) and chemical abundances of He, C, N, O, Ne, S, Ar. There were problems to obtain a suitable model to PN Type I.

Our results depicted good correlations with the MBC data, and the abundances average for PN non-Type I are in good agreement with the results of Clegg (1993), except in the S abundance, which is larger in our models.

The abundance correlations obtained are Ne/H vs. O/H (Henry 1989; Dopita & Meatheringham 1991a), Ar/H vs. O/H (Dopita & Meatheringham 1991a), and N/H vs. S/H. In addition, we have O/H vs. Z_*, where Z_* is the geometric average of Ne, S, and Ar. If we take Z_* as an indicator of metallicity, there is an increase of the abundance of O/H with Z_*, which is possible to explain because, of the contamination of ISM by massive stars.

Using the $Z = 0.008$ tracks calculated by Vassiliadis & Wood (1993), we see that the positions of the central stars are more compatible with the tracks that burn H, in discrepancy with the results of Dopita & Meatheringham (1991a,b).

Comparing our results with the AGB synthetic evolution model by Groenewegen & de Jong (1993), we see that: a) it only satisfies the relation N/O vs. N/H; b) the relation N/O vs. He/H is not well reproduced because the model does not predict the large He range; this problem was mentioned by other authors; c) it does not reproduce the large values of C/O because the model no longer reproduces the 3rd dredge-up when the Hot Bottom Burning (HBB) ceases, or possibily because these PNs do not experiment the HBB.

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A NEW METALLICITY DISTRIBUTION OF G DWARFS IN THE SOLAR NEIGHBORHOOD

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We present a new metallicity distribution of G dwarfs in the solar neighborhood, using *uvby* photometry and up-to-date parallaxes. Our distribution comprises 287 G dwarfs within 25 pc from the Sun, and differs considerably from previous classic solar neighborhood distributions by having a prominent single peak around [Fe/H] $= -0.20$ dex. The raw data are corrected for observational errors and cosmic scatter assuming a deviation $\sigma = 0.1$. In order to obtain the true abundance distribution, we have used correction factors, from the literature, which take into account the stellar scale heights. The distribution confirms the G dwarf problem, that is, the paucity of metal-poor stars relative to the predictions of the simple model of chemical evolution. Another feature of this distribution, which was already apparent in previous ones, is the small number of metal-rich stars again in comparison with the simple model. Our results indicate that it is very difficult to fit the simple model to this distribution, even with the definition of an "effective yield". A comparison with several models from the literature is made. We have found that models with infall are the most appropriate to explain the new metallicity distribution.

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RADIAL VELOCITIES OF SOUTHERN STARS ON THE HIPPARCOS CATALOG

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During 1992 we initiated a program to determine radial velocities of southern early type stars on the observing list of the Hipparcos satellite (Perryman et al. 1989). A total of 600 coude' stellar spectrograms of 400 objects, including some IAU standards, were observed at H-gamma to H-delta region. In order to ensure complete control over all steps we have decided to build up a set of routines to reduce the raw data. The program is used to wavelength calibrate the spectra, determine the continuum level and estimate the radial velocity. In all these phases the user can interact with the routines choosing the best parameters in each step.

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