THE CHEMICAL FEATURES OF GALACTIC PLANETARY NEBULAE

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The chemical composition of 218 galactic planatary nebulae is investigated, all the nebulae are divided into four classes according to the masses of the nebulae and progenitor stars. The values of local abundances, galactic abundances and electron temperature gradients are found for each class of nebulae. The correlations between element abundances are also investigated. The results are compared with theorical predictions.

Data on correlations between elements allow to conclude that:

- Only one dredge–up process takes place, obviously, in L– and In–PNe progenitor stars (masses below $3M_\odot$). In M–PNe progenitors (masses ~ 3–$8M_\odot$) three dredge–up processes could occur;
- CN–cycle can, possibly, play a role in progenitor for all PNe classes. In particular, this leads to low (in comparison to predicted values) C/O in M-PNe. On the other hand, there are some arguments that ON–cycle would exist not in massive (~ 3–$8M_\odot$) progenitors only, but can also play a role in stars with masses below $\sim 3M_\odot$.

As for other elements our data allow to conclude that:

- When second PN envelope arises (A–PN), some enrichment of Ne takes place while abundances of other elements do not vary essentially.
- The most essential cooling factor in PNe is oxygen. Abundances of nitrogen and carbon are less essential.
- Argon, perhaps, plays a certain role which is more essential than it was earlier suggested, in nucleosynthesis processes for the stars with masses below $\sim 8M_\odot$.
- Although total number of PNe used reaches 218, subdivision of PNe into the masses classes decreases the number of PNe used in the different samples. This tells on the reliability of conclusions.

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