

SOME SUBDWARF MODELS

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In this paper we present the results obtained from the numerical integration of the equations for the case of subdwarfs with masses comparable and somewhat larger than that of the Sun.

We have computed several sequences with different chemical compositions.

As was done by other authors, we have varied the helium content from 1% to about the solar value, and Z from 0% to 0.3%. Besides, we have investigated the case of normal carbon abundance even with $Z > Z_{\odot}$. This hypothesis is not entirely arbitrary: according to Hayashi and Nashida it would be possible to have a considerable abundance of carbon in the primordial gas of the Galaxy in an "explosive" cosmological model; furthermore, and this we feel is a stronger argument, carbon 12 as well as other isotopes which are multiples of α particles, is synthesized in "first generation" stars and may reach solar abundance before other elements. From the observational point of view it is difficult to reach definitive conclusions, since the carbon abundance can only be derived from the observation of free radicals (CH and CN), and are rather contradictory.

With regard to the calculations, we have made the following assumptions:

Opacity: When $Z = 0$, we used Reiz's opacity law, which combines free-free transitions and electron scattering. When $Z \neq 0$, we used a simple law to represent as well as possible an extrapolation of the tables of Keller and Meyerott.

Energy: When $X_{\odot} = 0$ we used the pp cycle; when $X_{\odot} \neq 0$ we combined the pp and CN cycles.

Convection: We took into account convective regions at the center of the star, but we did not carry out detailed atmosphere calculations.

The results are presented as H-R diagrams both in the L_{bol}, T_e plane and in the $V, B-V$ plane.

All calculations were done with the Ferranti "Mercury" calculator of the Computing Center of the University of Buenos Aires.