MODELS OF MAIN-SEQUENCE STARS

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This paper presents results of the computation of models for main-sequence stars having homogeneous chemical composition, in the phase of hydrogen reactions. Fourteen models having convective core and radiative envelope are considered, with masses 4, 5, 8, 10 and 16 $\mathbf{M}_\odot$ and chemical structure $0.650 \leqslant X \leqslant 0.900$, $0.01 \leqslant Z \leqslant 0.045$. These models are compared with models of other authors and with observational results. The computed chemical composition of stars from the upper part of the zero main sequence is: $X = 0.650$, $Z = 0.40$. The $\mathbf{M} - L$ relation for two different chemical structures is presented. The influence of the variation in chemical composition on the Kramers opacity law and the interpolation formula based on the Keller and Meyerott tables is discussed.

THE SYSTEM OF EQUATIONS FOR THE STELLAR STRUCTURE

The basic system of equations for stars having spherical symmetry is:

$$\frac{dP}{dr} = -\rho \frac{G\,\mathbf{M}_r}{r^2} \qquad \text{(hydrostatic equilibrium)} \qquad (1)$$

$$\frac{d\mathbf{M}_r}{dr} = 4\pi r^2 \rho \qquad \text{(conservation of mass)} \qquad (2)$$

$$\frac{d\,Lr}{dr} = 4\,\pi r^2 \rho\varepsilon \qquad \text{(thermal equilibrium)} \qquad (3)$$

$$\frac{dT}{dr} = -\frac{3}{4\,ac} \cdot \frac{\varkappa\,\rho}{T^3} \cdot \frac{L_r}{4\pi r^2} \qquad \text{(radiation)} \qquad (4a)$$

$$\text{or } \frac{dT}{dr} = -\frac{1-\Gamma_2}{\Gamma_2} \cdot \frac{T}{P} \cdot \frac{dP}{dr} \qquad \text{(convection)} \qquad (4b)$$

P, $\mathbf{M}_r$, L_r and T are unknown functions, r is an independent variable, G is the gravitational constant, a is the radiation constant and c is the velocity of light.

Parameters ρ, ε, $\varkappa$ and Γ_2 are functions of independent variables and of chemical composition. For practical purposes, system (1—4) was transformed by introduction of dimensionless variables P_1, T_1, L_1, q, R_1 and ρ_1, by relations:

$$P = P_1 \cdot \bar{P};\ T = T_1 \cdot \bar{T};$$
$$r = R_1 \cdot R_\odot;\ L = L_1 \cdot L_\odot;$$
$$\rho = \rho_1 \cdot \bar{\rho};\ \mathbf{M}_r = q\,\mathbf{M}_0\ \ \mathbf{M}_\odot \cdot 10^{-4} \qquad (5)$$

where

$$\bar{P} = 10^{10} \text{ dyn/cm}^2; \quad \bar{T} = 10^8 \text{ K};$$
$$R_\odot = 6.96 \times 10^{10} \text{ cm}; \quad L_\odot = 3.90 \times 10^{33} \text{ erg/s} \tag{6}$$
$$\bar{\rho} = 10^{-3} \text{ gr/cm}^3; \quad \mathbf{M}_\odot = 1.989 \times 10^{33} \text{ gr}$$

$\mathbf{M}_0$ is the total mass of a star in units of $\mathbf{M}_\odot$. If mass is introduced as an independent variable instead of radius, then the system (1—4), using (5) becomes:

$$\frac{dP_1}{dq} = C_1 R_1^{-4} q \tag{7}$$

$$\frac{dR_1}{dq} = C_2 R_1^{-2} \rho_1^{-1} \tag{8}$$

$$\frac{dL_1}{dq} = C_3 \varepsilon \tag{9}$$

$$\frac{dT_1}{dq} = \nabla \frac{T_1}{P_1} \cdot \frac{dP_1}{dq} \tag{10}$$

where $\nabla = \dfrac{\partial \ln T_1}{\partial \ln P_1}$ is the logarithmic temperature gradient.

For radiation

$$\nabla \equiv \nabla_r = C_4 \frac{\varkappa L_1}{(1-\beta) q} \tag{11}$$

For convection $(\gamma = c_p/c_v = 5/3) : \nabla = \nabla_a = \dfrac{\Gamma_2 - 1}{\Gamma_2} =$

$= 0.4 \dfrac{1 + 3(1-\beta)}{1 + 6(1-\beta) - 0.6(1-\beta)^2}$ where $\beta = p_g/(p_g + p_r)$. Equation (10) contains ∇_r or ∇_a, whichever is smaller.

An additional system of equations determines parameters ρ, ε and $\varkappa$. The equation of state of the matter (with ideal gas) has the form

$$P_1 = p_g + p_r = C_5 \frac{\rho_1 T_1}{\beta \mu} \tag{12}$$

Mean molecular weight of a fully ionized gas is

$$\mu = 0.25 [5X - (3 - 4\eta) Z + 3], \quad \eta < 1 \tag{13}$$

(in this paper $\eta = 9/16$).

X — hydrogen concentration by mass

Z — concentration of elements heavier than helium by mass.

$$\beta = 1 - C_6 \frac{T_1^4}{P_1} \tag{14}$$

$$\text{and } \rho_1 = C_7 \frac{\beta \mu}{1-\beta} \cdot T_1^3. \tag{15}$$

The energy generation law

$$\varepsilon = [C_8 X T_1^4 + Z(C_9 T_1^4)^4] \rho_1 X \cdot 10^{-3} \tag{16}$$

was taken according to Haselgrove and Hoyle [1]. It gives the quantity of energy ε (erg $\cdot g^{-1} \cdot s^{-1}$), produced in the $p-p$ reaction and the $C-N$ cycle.

The opacity law was taken to be represented by the interpolation formula from Keller and Meyerott tables

$$\varkappa = \Sigma \varkappa_i + \frac{\varkappa_A \cdot \varkappa_B + \varkappa_3 \cdot \varkappa_4}{\Sigma \varkappa_i} \tag{17}$$

which is given by Henyey et al. [2]. Here is

$$\varkappa_1 = \frac{115.2\,(1+X)\,X}{V T^{4.25}} \tag{18}$$

the opacity of hydrogen and

$$\varkappa_2 = \left[\frac{0.3125}{T^3 (T^2 + T^{0.75})} + \frac{2 - Y}{(0.15 - 0.7\,T + 3\,T^2)^4}\right]\left[\frac{186\,Y\,(1+X)}{V}\right] \tag{19}$$

the opacity of helium and

$$\begin{aligned}\varkappa_3 = (4.38 \times 10^3 Z)/[&[(1/T^{1.5} + 0.0144\,T^2)\cdot \\ &[1 + 1.34\,VT^5/(1+X)]\cdot[1 + 0.0538\,VT^2/(1+X)] \\ &[1 + 0.455\,(1+X)^{1/2}/V^{1/2}]]^{1/2}]\end{aligned} \tag{20}$$

the opacity of heavier elements, and

$$\varkappa_4 = 0.195\,(1+X) \tag{21}$$

the opacity caused by dispersion on free electrons. Here

$$\begin{aligned}&\varkappa_A = \varkappa_1 + \varkappa_2;\ \varkappa_B = \varkappa_3 + \varkappa_4; \\ &\Sigma \varkappa_i = \varkappa_A + \varkappa_B\end{aligned} \tag{22}$$

Constants $C_1, \ldots C_1$ have values

$$C_1 = \frac{G\,\mathbf{M}_\odot \cdot 10^{-8}}{4\pi\, R_\odot^4\, \bar{P}}\,\mathbf{M}_\odot^2 = -\,0.8945791 \cdot 10^{-3}\,\mathbf{M}_\odot^2$$

$$C_2 = \frac{\mathbf{M}_\odot \cdot 10^{-4}}{4\pi\, R_\odot^3\, \bar{\rho}}\,\mathbf{M}_\odot = 0.4694595 \cdot 10^{-1}\,\mathbf{M}_\odot$$

$$C_3 = \frac{\mathbf{M}_\odot \cdot 10^4}{L_\odot}\,\mathbf{M}_\odot = 0.5099997 \cdot 10^{-14}\,\mathbf{M}_\odot$$

$$C_4 = \frac{L_\odot \cdot 10^4}{16\pi\, c\, G\, \mathbf{M}_\odot}\,\mathbf{M}_\odot^{-1} = 0.1951385\,\mathbf{M}_\odot^{-1}$$

$$C_5 = \frac{k}{m_H} \cdot \frac{\bar{\rho}\,\bar{T}}{\bar{P}} = 0.8317 \cdot 10^8$$

$$C_6 = \frac{a}{3} \cdot \frac{\bar{T}^4}{\bar{P}} = 0.2522667 \cdot 10^8$$

$$C_7 = \frac{am_H}{3k} \cdot \bar{T}^3 = 0.3033145$$

$$C_8 = \bar{\rho}\left(\frac{\bar{T}}{10^6}\right)^4 \cdot 10^{-2} = 0.1 \cdot 10^4$$

$$C_9 = \left[\frac{10^{-15}}{2.25}\left(\frac{\bar{T}}{10^6}\right)^{16} \cdot \bar{\rho}\right]^{1/4} = 0.2590020 \cdot 10^4$$

The basic task of a model construction is to compute values P_1, T_1 in the star centre (index „c") and L_1, R_1 on the surface (index „o"), as well as the variation of these quantities within the model, starting from given constants of the model (**M** and μ), by integration of the system (7—10) with given boundary conditions.

BOUNDARY CONDITIONS

a) Boundary conditions in the centre of the model

Values for T_1 and P_1 in the centre of the model can be got, in a first approximation, as the solution of the equation of hydrostatic equilibrium for the polytropic gas composition.

The equation of hydrostatic equilibrium

$$\frac{1}{\rho r^2} \frac{d}{dr}\left[\frac{r^2}{\rho} \cdot \frac{dp_g}{dr}\right] = -4\pi \cdot G$$

with dimensionless variables

$$x_1 = a \frac{r}{\sqrt{n+1}}; \quad \rho_1 = \rho/\rho_c;$$

$$p_1 = p_g/p_c; \quad T_1 = T/T_c$$

($T_1 = p_1/\rho_1$, for the case of ideal gas), where $a = \rho_c \sqrt{4\pi G/p_c}$, n is the index of polytropy, gets the form

$$\frac{d}{dx_1}\left[x_1^2 p_1^{-\frac{n}{n+1}} \cdot \frac{dP_1}{dx_1}\right] = -(n+1)\, p^{n/(n+1)} \cdot x_1^2, \tag{23}$$

for gas pressure and

$$\frac{d}{dx_1}\left[x_1^2 \frac{dT_1}{dx_1}\right] = -T_1^n x_1^2 \tag{24}$$

for the temperature.

In the general case (for any n) solutions for pressure and temperature are sought in a form of power series in x_1.

The equation (23) with initial conditions in the star centre ($x_1 = 0$):

$$p_1 = 1; \quad dp_1/dx_1 = 0$$

gives for the pressure

$$p_1(x_1) = 1 - \frac{n+1}{3!} x_1^2 + \frac{8n(n+1)}{15 \cdot 4!} x_1^4 - \ldots\ldots \quad (25)$$

The equation (24) with initial conditions in the star centre

$$T_1 = 1;\ dT_1/dx_1 = 0;$$

gives for the temperature

$$T_1(x_1) = 1 - \frac{1}{3!} x_1^2 + \frac{n}{5} x_1^4 - \frac{n(8n-5)}{3 \cdot 7!} x_1^6 + \ldots\ldots \quad (26)$$

The expression for the radius in the vicinity of the centre can be written, substituting (5), as

$$R_{1c} = (C_{10} \cdot \rho_{1c}/q_c)^{-\frac{1}{3}} \quad (27)$$

Thus the initial value for R_1 in the case of integration outwards can be calculated by iteration according to formula

$$R_1^{(k+1)} = R_1^{(o)} \left\{ 1 - \frac{3}{20} \left[\frac{R_1^{(k)}}{\alpha} \right]^2 + \frac{1}{70} \left[\frac{R_1^{(k)}}{\alpha} \right]^4 \right\}^{-1/3} \quad (28)$$

The equation (25) gives gas pressure. The initial value of the total pressure (gas + + radiation) is got substituting (5) for $n = 1.5$

$$P_1 = (\beta P_1)_c \left\{ 1 - \frac{5}{12} \left(\frac{R_1}{\alpha} \right)^2 + \frac{1}{12} \left(\frac{R_1}{\alpha} \right)^4 \right\} + (C_{12} T_1)^4 \quad (29)$$

The value of temperature at the initial point in the case of the integration outwards can be got from equation (26) which, for $n = 1.5$, and according to (5), can be written as

$$T_1 = T_c \left\{ 1 - \frac{1}{6} \left(\frac{R_1}{\alpha} \right)^2 + \frac{1}{80} \left(\frac{R_1}{\alpha} \right)^4 - \frac{1}{1440} \left(\frac{R_1}{\alpha} \right)^6 \right\} \quad (30)$$

In the equations (27—30),

$$C_{10} = \frac{4\pi R_\odot^3 \bar{\rho}}{3 M_\odot \cdot 10^{-4}} M_\odot^{-1} = 0.7100368 \cdot 10^1 M_\odot^{-1}$$

$$R_1^{(o)} = R_{1c};\ R_1 = R_1^{(k+1)};\ \alpha = (C_{11} \beta_c P_c)^{1/2}/\rho_{1c}$$

$$C_{11} = \frac{2.5 \times 10^{16}}{4\pi G R_\odot^2} = 0.6159087 \cdot 10^1$$

$$C_{12} = \left(\frac{a}{3} \cdot 10^{-10} \right)^{1/4} \cdot 10^8 = 0.7087042 \cdot 10^2$$

The equations (28—30), when integrating outwards, allow computation of R_1 P_1, T_1 at the initial point q_c (where $L_1 = 0$) if parameters P_c and T_c are known.

b) Boundary conditions on the surface of the model ($q = 10^4$) [5]

$$R_1 = R_o;\ L_1 = L_o; \tag{31}$$

$$T_1 = T_o = T_{eff}/\bar{T} = C_{13}\left(\frac{L_o^{1/2}}{R_o}\right)^{1/2} \tag{32}$$

$$P_1 = P_o^{(k+1)} = 0.5\left[P_o^{(k)} + \frac{C_{14}}{R_o^2 \varkappa (P_o^{(k)}, T_o, \mu)}\right] \tag{33}$$

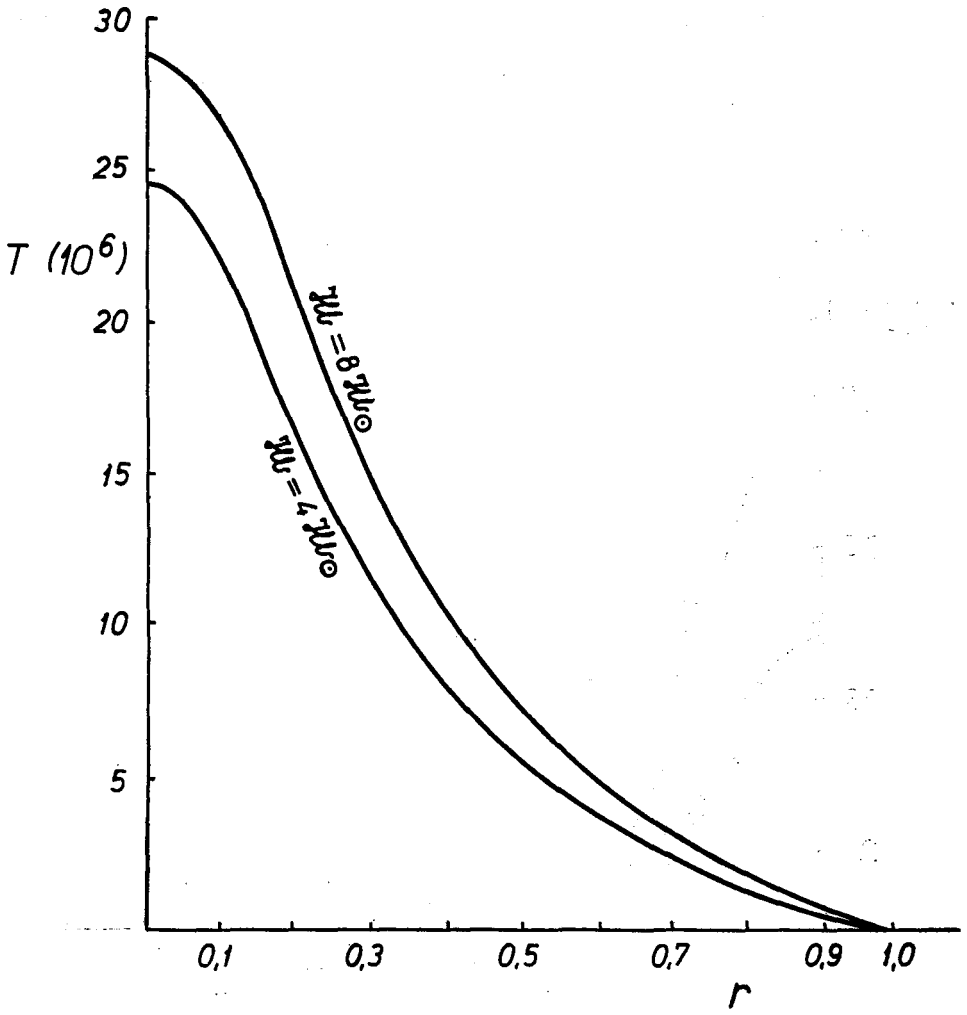

Fig. 1

First, the value of temperature is computed starting from known parameters R_0 and L_0. The pressure is obtained by iteration from (33). Here are

$$C_{13} = \left(\frac{L_\odot}{\pi a c R_\odot^2}\right)^{1/4} \cdot 10^{-8} = 0.5597269 \cdot 10^{-4}$$

$$C_{14} = 0.25 \frac{a \bar{T}^4 \mathbf{M}_\odot}{4\pi R_\odot^3 \bar{P} \bar{\rho}} \cdot \left(\frac{2.5 \times 10^{16}}{4\pi G R_\odot^2}\right)^4 \mathbf{M}_\odot = 0.1278158 \cdot 10^{14} \mathbf{M}_\odot$$

The initial value of $P_0 = 0.5 \times 10^{-6}$ [4].

RESULTS OF THE COMPUTATION

Using the „equlibrium point" method, 14 models were computed of homogeneous chemical structures from the upper part of the zero main sequence. Four models were constructed for $\mathbf{M} = 4\,\mathbf{M}_\odot$ and $\mathbf{M} = 8\,\mathbf{M}_\odot$ and two models for $\mathbf{M} = 5\,\mathbf{M}_\odot$ and $\mathbf{M} = 10\,\mathbf{M}_\odot$ and $\mathbf{M} = 16\,\mathbf{M}_\odot$. Chemical structure was declared according to $0.650 \leqslant X \leqslant 0.900$ and $0.010 \leqslant Z \leqslant 0.045$.

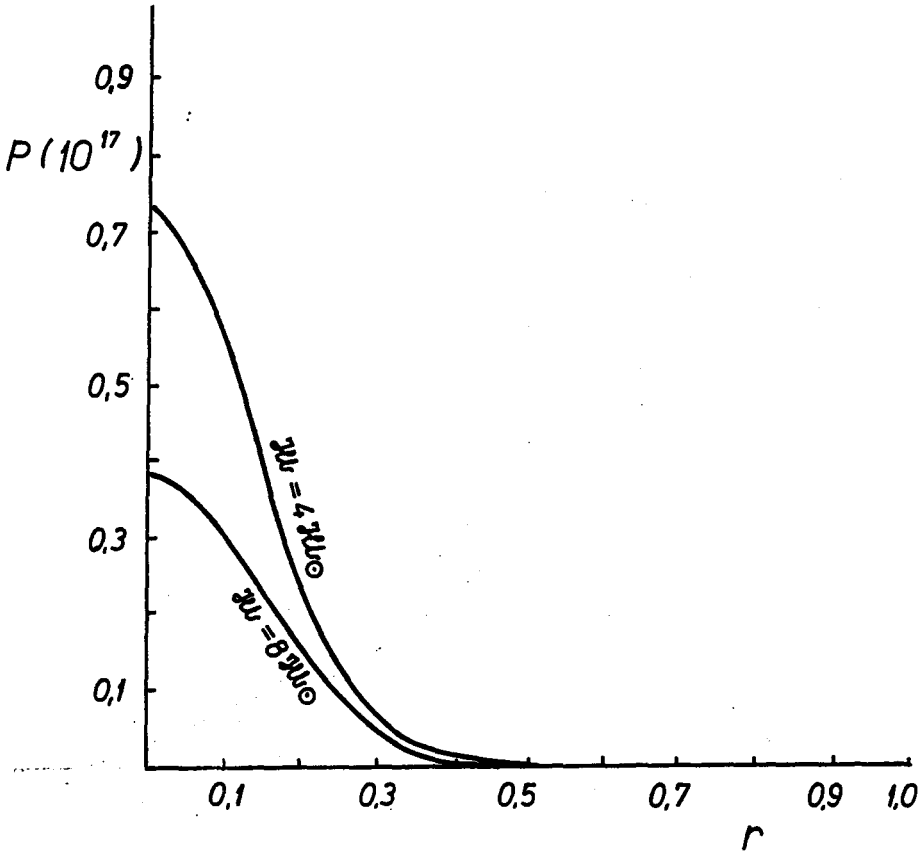

Fig. 2

The system of differential equations for stellar structure (7—10) was solved by the Runge-Kutta method with variable step and precision of 10^{-5}; corrections were calculated using determinantes. Computations were performed on the IBM 360/44 which belongs to the Numerical Centre of the Mathematical Institute of SR Serbia.

Computing time for a test paier of integrations (inwards and outwards) was about $1^m\ 15^s$, and for a complete model about 25^m—35^m, approximately. The initial point for the integration outwards was $q_c = 10^{-3}$ [4], while for the „equilibrium point" the value $q_f = 4 \times 10^{-3}$ was chosen.

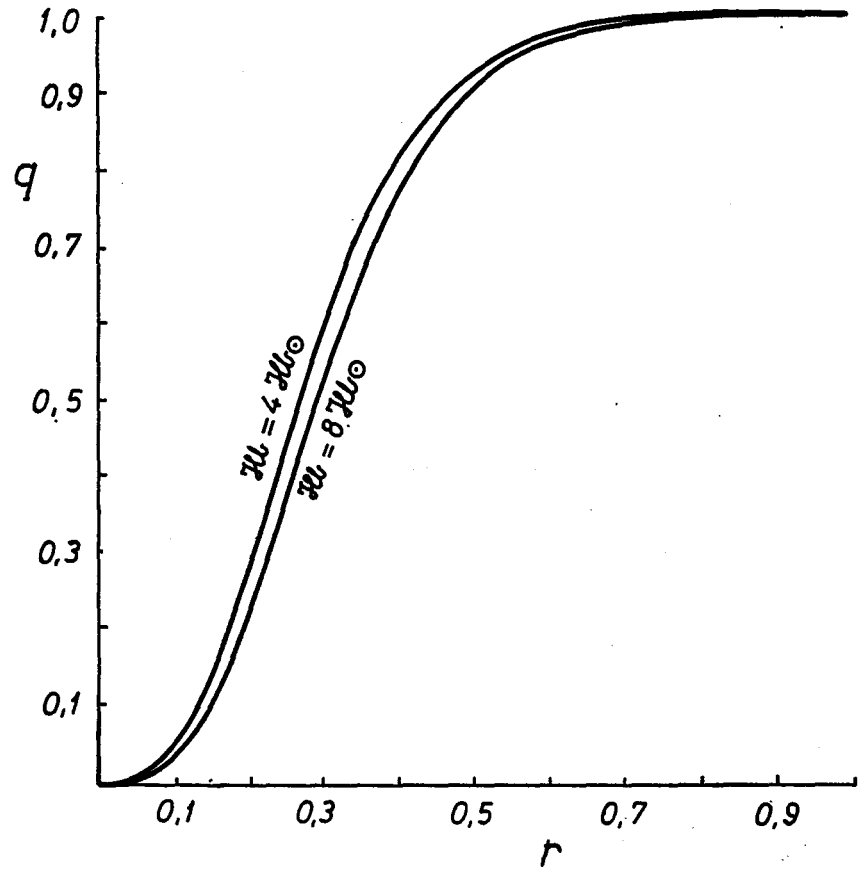

Fig. 3

The characteristics of the computed models are given in the Table 1. The structural parameters are expressed in units of solar mass. The mass at the edge of the convective core is denoted as q_k. The same is valid for parameters in other tables. Separately, in Tables 2.—6., the variation of parameters is presented as a function of q (81 values for q are given for the integration outwards and 49 for integration inwards) for models No: 4.3, 5.2, 8.3, 10.2, and 16.2, $aDb = a \cdot 10^b$.

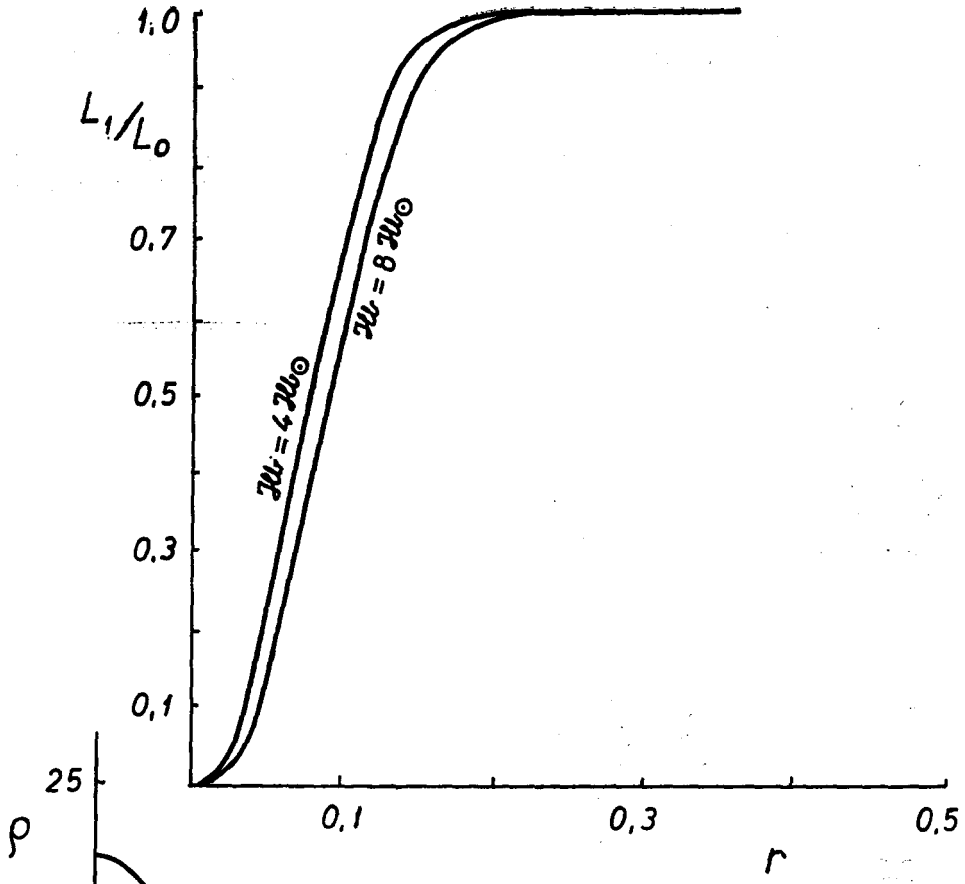
1,0
L_1/L_0
0,7
0,5
0,3
0,1
$M = 4\,M_\odot$
$M = 8\,M_\odot$
0,1
0,3
0,5
r

Fig. 4

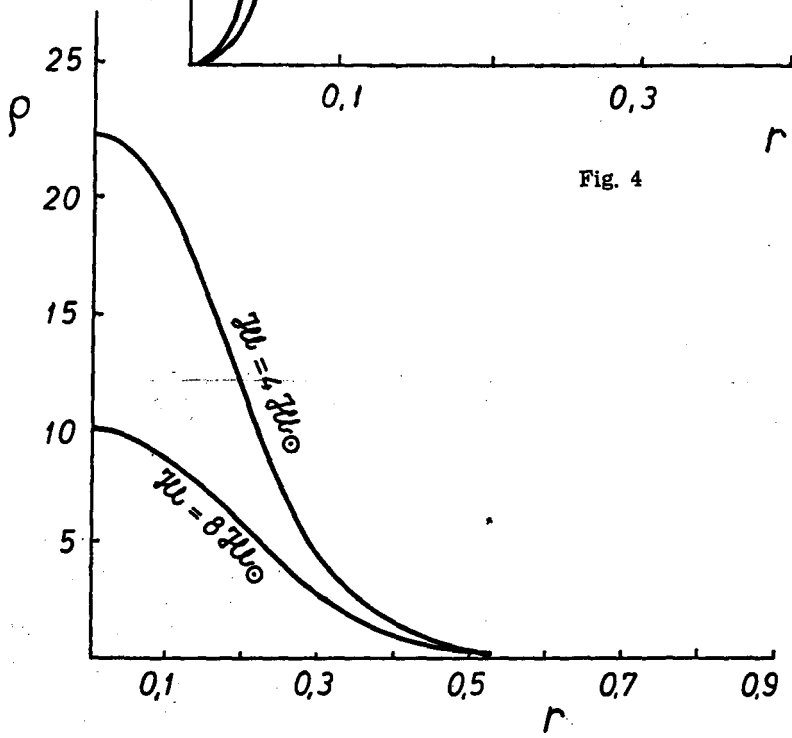
25
ρ
20
15
10
5
$M = 4\,M_\odot$
$M = 8\,M_\odot$
0,1
0,3
0,5
0,7
0,9
r

Fig. 5

Some results are presented graphically on the Figure 1—6, for models No: 4.3 and 8.3. Present models are denoted as PM and the zero main sequence as ZMS.

The temperatures in the centre of the models were varying from $24 \times 10^6 K$ to $33 \times 10^6 K$, the pressures from 0.2×10^{17}; to 1.4×10^{17} dyn/cm^2, and the

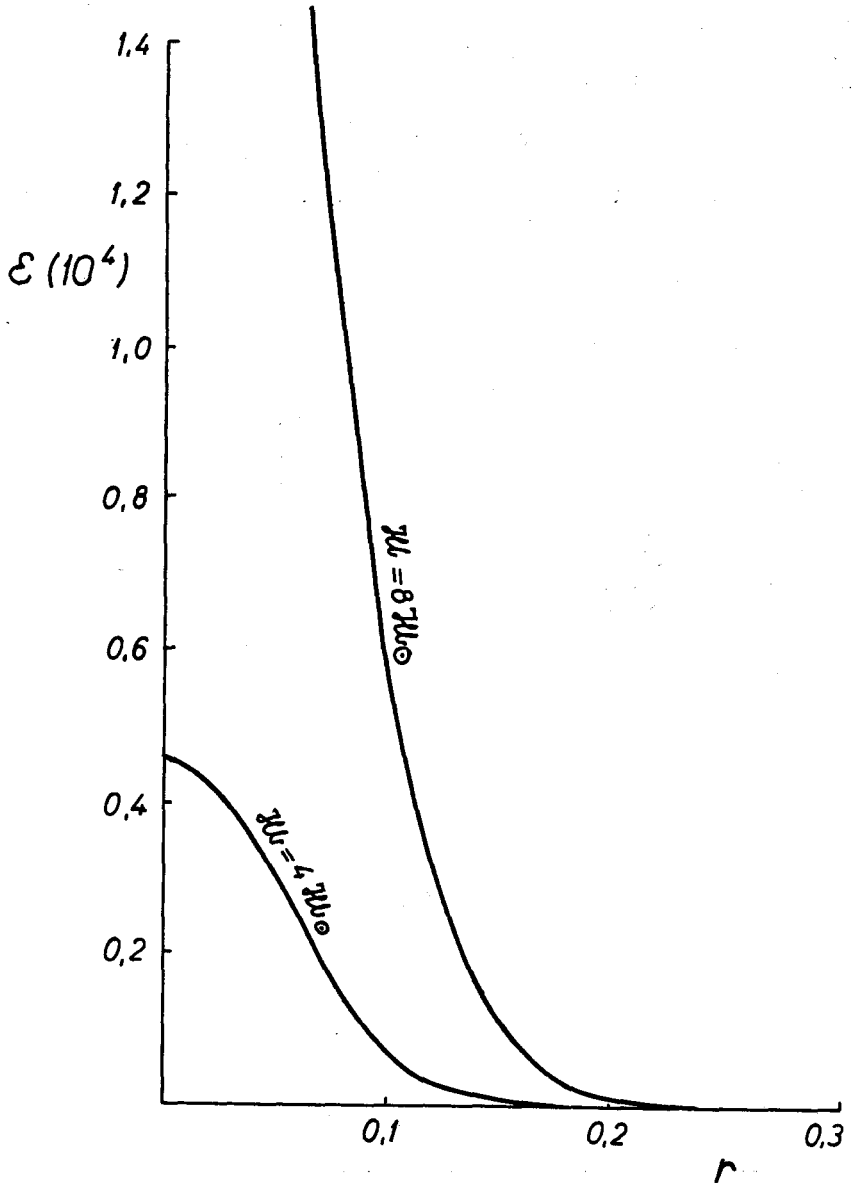

Fig. 6

ANALYSIS OF RESULTS AND CONCLUSIONS

It was shown that the model is very sensitive to the variation of chemical composition. The temperature and pressure in the star centre were decreasing, the radius increasing and the luminosity was decreasing as the proporiton of heavy elements was increased while the mass was kept constant. As the mass was increasing the influence of chemical composition on parameters of a model was becoming smaller. For example, for $X = 0.650$ and $\Delta Z/Z = 12\%, \Delta L/L = 6\%$, for $\mathbf{M}_\odot = 4$ and 3% for $\mathbf{M}_\odot = 8$. The increased hydrogen concentration by mass for constant Z, for every model separately, was causing an opposite effect on P_c and R; the pressure in the centre was increasing while T_c, R and L are decreasing. This influence on parameters was decreasing with an increase of mass, also. For example, for $Z = 0.04$ and $\Delta X/X = 7.4\%$, $\Delta L/L = 24\%$ for $\mathbf{M}_\odot = 4$ and 21% for $\mathbf{M}_\odot = 8$. The quantity of energy radiated by a star, measured by the quantity L, is almost 4 times more sensitive to the variation of X than to the variation of Z. It is possible to conclude from the table of structural parameters of homogeneous models for zero main-sequence stars given by Masevitch et al. [4] that for $Z = 0.04$ and $\Delta X/X = 7.2\%$, for the model with $\mathbf{M}_\odot = 4, \Delta L/L = 29\%$. In respect to out, results, the increased influence of X is noticeable for all other model parameters. In other words, Kramers coefficient ($\varkappa_1$) is more sensitive to the change of X and Z than the coefficients from Keller and Meyerott tables ($\varkappa_2$) are. The difference

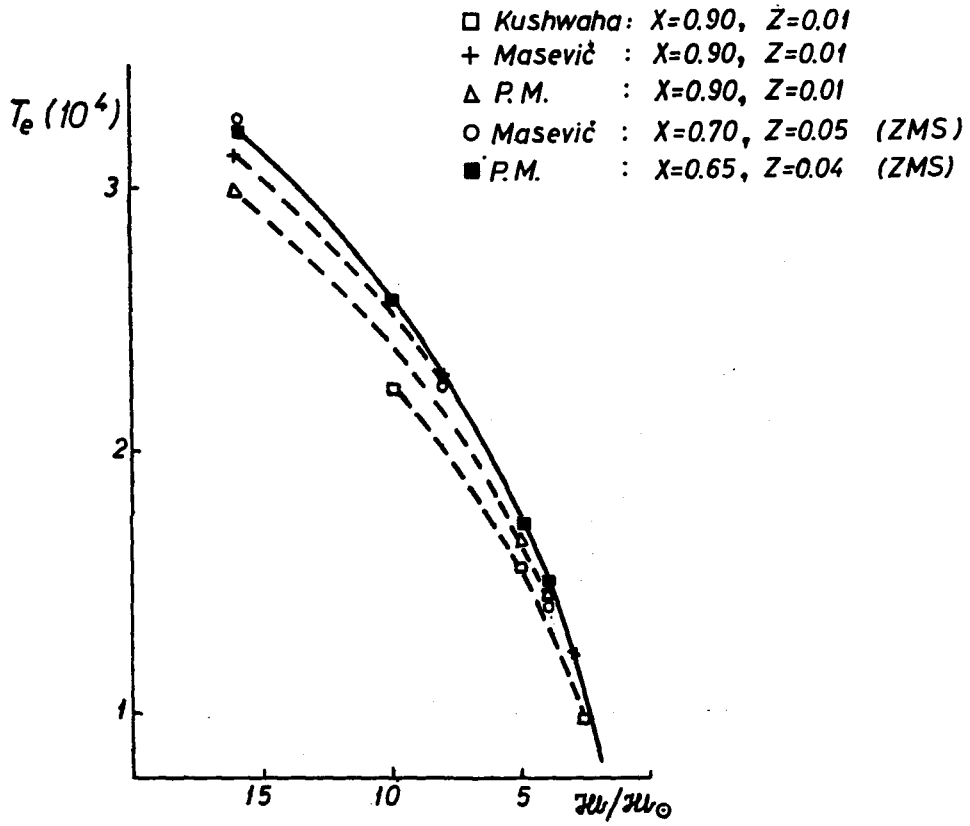

Fig. 7

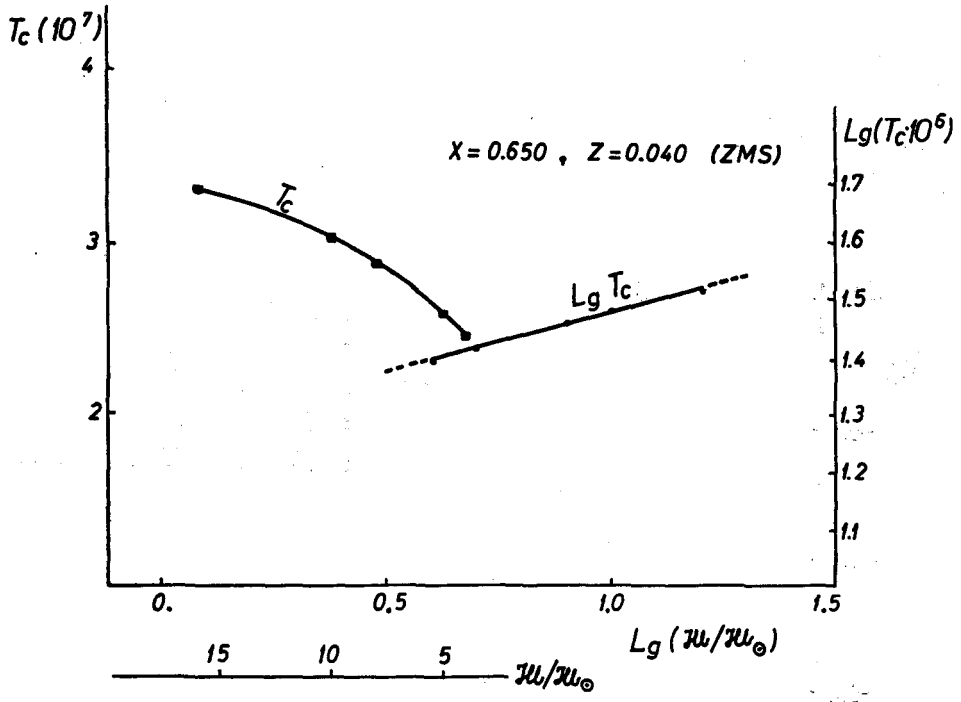
$T_c\,(10^7)$
4
3
2
X = 0.650 , Z = 0.040 (ZMS)
T_c
Lg T_c
$Lg(T_c\cdot10^6)$
1.7
1.6
1.5
1.4
1.3
1.2
1.1
0.
0.5
1.0
1.5
Lg ($\mathcal{M}/\mathcal{M}_\odot$)
15
10
5
$\mathcal{M}/\mathcal{M}_\odot$

Fig. 8

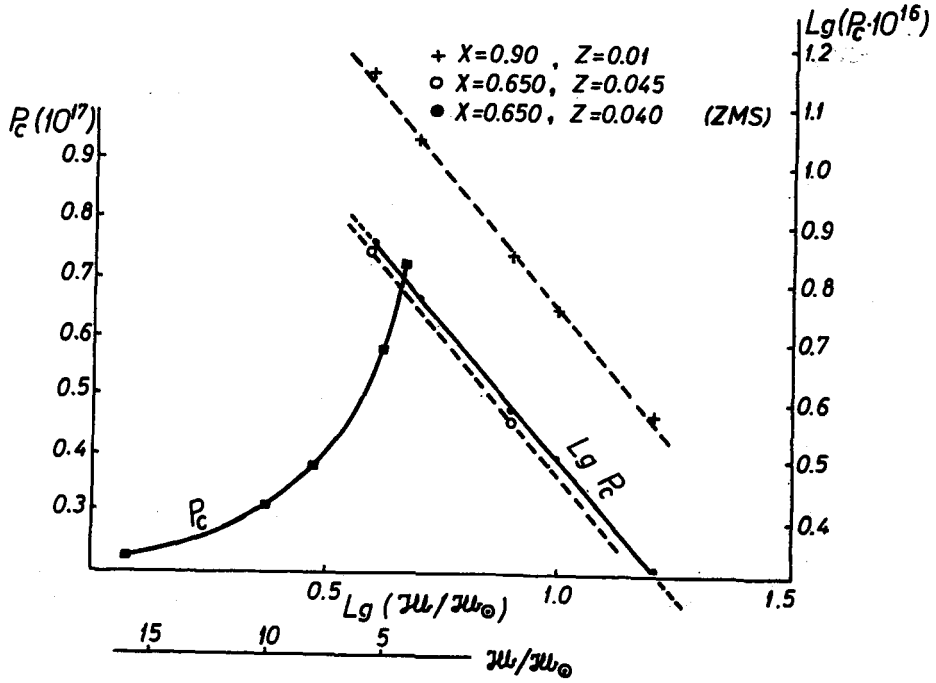
+ X=0.90 , Z=0.01
o X=0.650, Z=0.045
● X=0.650, Z=0.040 (ZMS)
$P_c\,(10^{17})$
0.9
0.8
0.7
0.6
0.5
0.4
0.3
$Lg(P_c\cdot10^{16})$
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
P_c
Lg P_c
0.5
1.0
1.5
Lg ($\mathcal{M}/\mathcal{M}_\odot$)
15
10
5
$\mathcal{M}/\mathcal{M}_\odot$

Fig 9

in sensitivity is greater for variations of X. Also, $\varkappa_1 - \varkappa_2 > 0$ for the mass ($\simeq 2$—4) $\mathbf{M}_\odot$ and decreases fast with an increase of mass. Already for $\mathbf{M} = 8\mathbf{M}_\odot$, $\varkappa_2 > \varkappa_1$. As T_c increases, the ratio $\varkappa_2/\varkappa_1$ is increased.

The Figure 7. represents the function $T_{ef}(\mathbf{M}_\odot)$ for present models and models of some other authors, for different chemical composition. It can be seen, that the present models (PM) are between models of Masevitch et al. [4] and Kushwaha

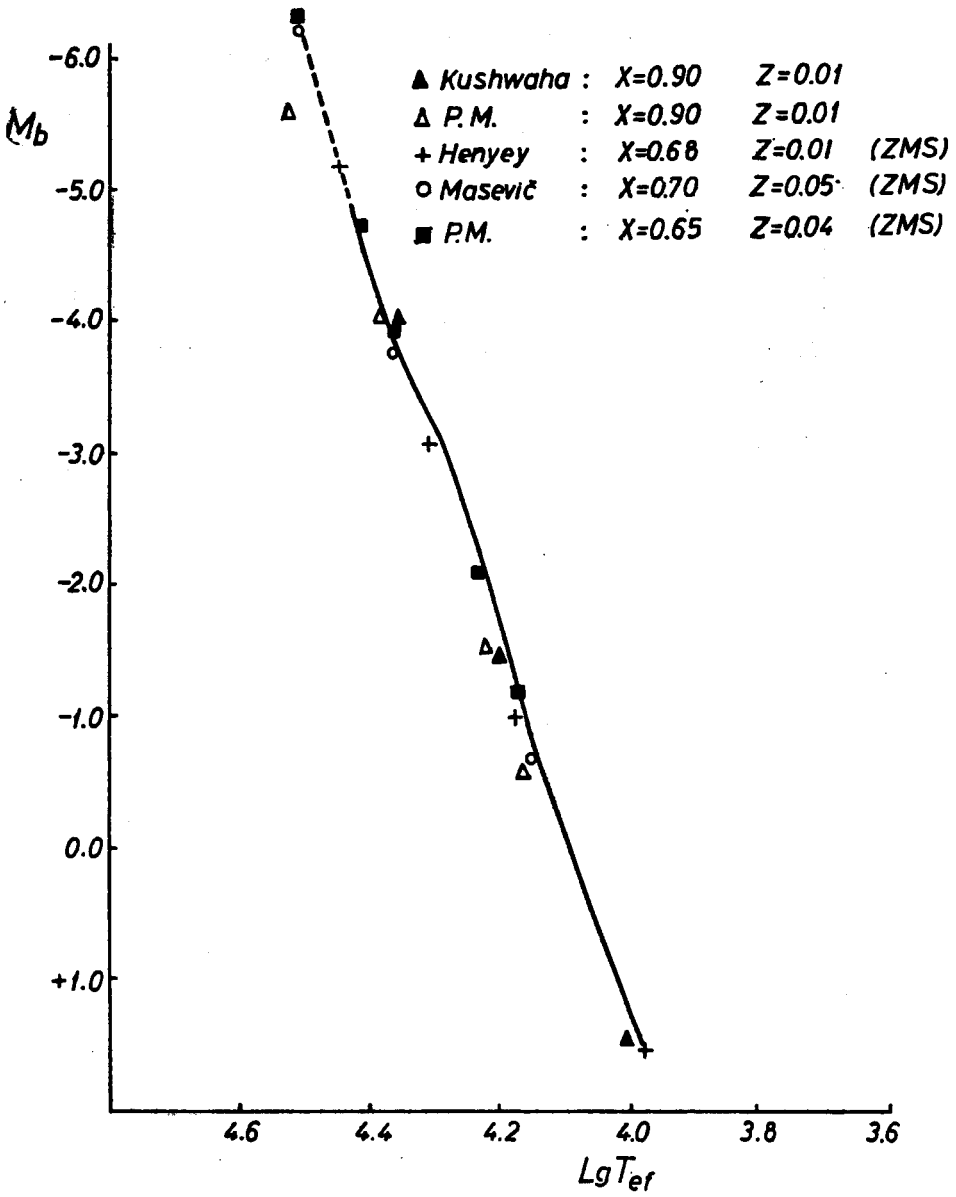

Fig 10

[3]. The difference in T_{ef} between PM and models of Masevitch is about 1400 K for $\mathbf{M}_\odot = 16$ and decreases with mass decreased. The difference is about 1600 K if comparison is made with the model of Kushwaha for $\mathbf{M}_\odot = 10$.

For all models, independent of chemical composition, the gas pressure is much greater than the radiation pressure: $\beta \approx 0.99$ in the core and $\beta \approx 0.97$ in the surface layer.

The Figures 8 and 9 represent the function $T_c(\mathbf{M}_\odot)$ and $Lg\ T_c\ (Lg\ \mathbf{M}_\odot)$, $P_c(\mathbf{M}_\odot)$ and $Lg P_c\ (Lg\ \mathbf{M}_\odot)$. Any relation giving B_c and T_c as a function of $\mathbf{M}$, is very usefull for model computation and selection of boundary conditions in the centre of a star. This is particularly true if the function is linear when presented on a logarithmic scale for the given mass interval. It can be seen that the change of chemical composition has a strong influence on P_c, as expected, and negligibly small on T_c.

The Figure 11 represents the relation between L and T_{ef} for stars on the empirical zero main sequence (full line), plotted according to Sandage [6]. The smallest difference is found for PM with $X = 0.650$ and $Z = 0.040$. For these models, the relation $\mathbf{M}b$ — $Lg T_{ef}$ fits the empirical sequence also (Fig. 10). Therefore it was concluded that chemical composition of stars from the upper part of the zero main sequence is: $X = 0.650$ and $Z = 0.040$.

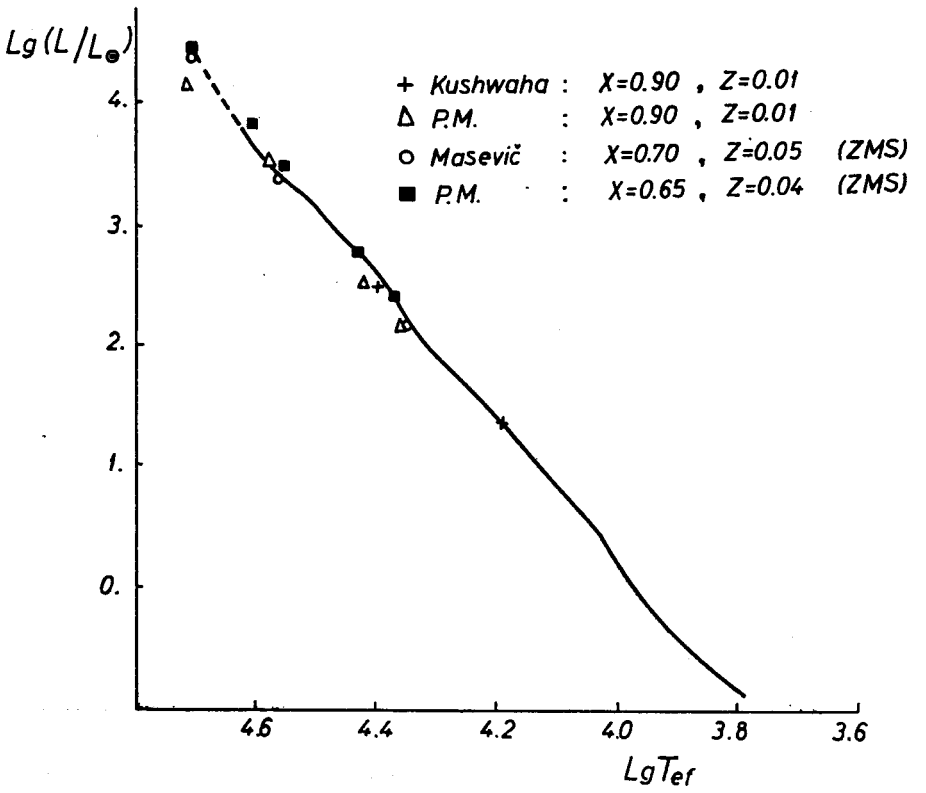

Fig. 11

The Figure 12. represents the $\mathbf{M} - L$ relation. The points correspond to observational results. For present models, the following $\mathbf{M} - L$ relation is obtained

$$Lg\,(L/L_\odot) = +\,3.40\,Lg\,(\mathbf{M}/\mathbf{M}_\odot) + 0.37$$
$$\pm\,0.09 \qquad\qquad \pm\,0.08$$

$$X = 0.650,\ Z = 0.040 \quad -6 < \mathbf{M}b < -1$$

or $L/L_\odot = 2.32\,(\mathbf{M}/\mathbf{M}_\odot)^{3.40}$

and $Lg\,(L/L_\odot) = +\,3.31\,Lg\,(\mathbf{M}/\mathbf{M}_\odot) + 0.19$
$$\pm\,0.07 \qquad\qquad \pm\,0.06$$

$$X = 0.9,\ Z = 0.01$$

or $L/L_\odot = +\,1.54\,(\mathbf{M}/\mathbf{M}_\odot)^{3.31}$

$$-5.6 < \mathbf{M}b < -0.6$$

The $\mathbf{M} - R$ relation could not be obtained from results represented on Figure 13, because linear approximation is too uncertain. In order to obtain this

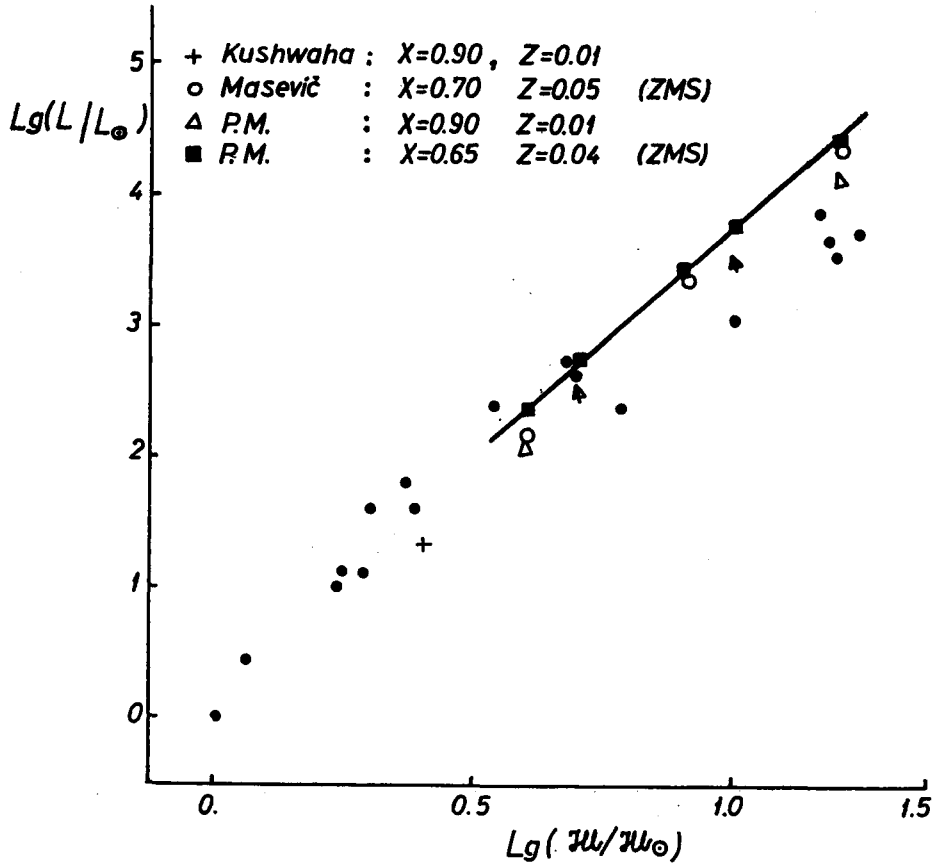

Fig. 12

relation, it would be necessary to compute considerable number of models with different masses ($4 \leqslant M_o \leqslant 16$), and perhaps to make the interval of M_o greater.

It should be mentioned that the correct determination of chemical composition for the stars on the zero main sequence is necessary for the investigation of stellar evolution. This problem can be solved only by analysis of a homogeneous material — homogeneous in physical parameters and in the method of model construction.

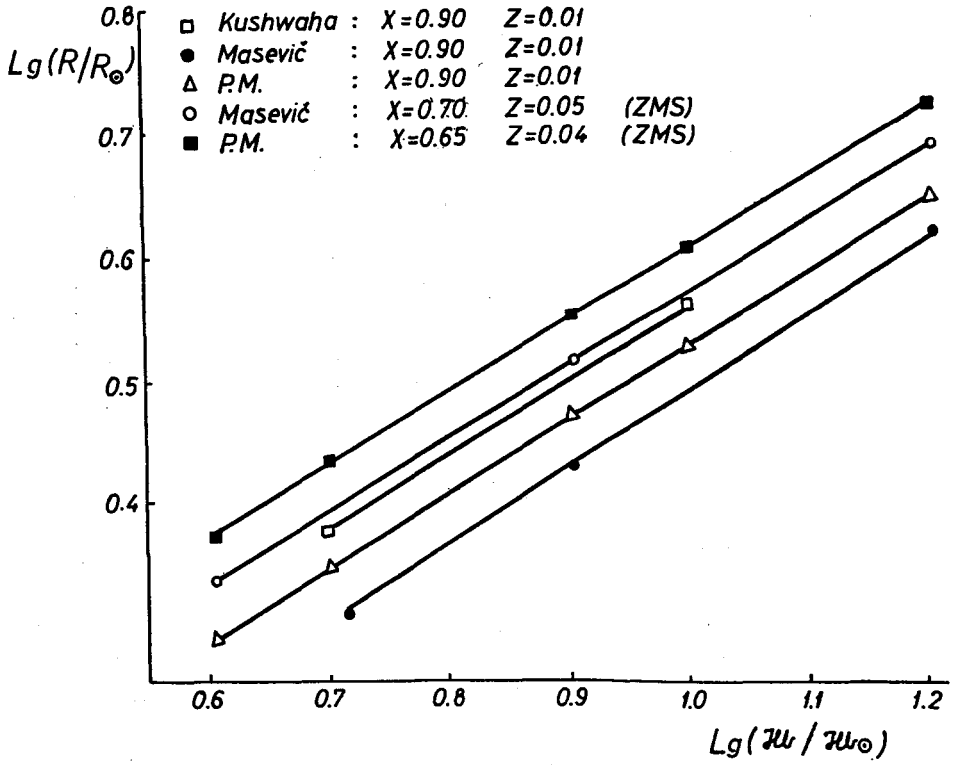

Fig. 13

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TABLE 1.

TABLE OF STRUCTURAL PARAMETERS OF HOMOGENEOUS STELLAR MODELS

(P, T and ρ are in CGS system. Parameter q is equal 1 on the surface)

No	X	Z	$R/R_\odot$	$L/L_\odot$ (10^3)	P_c (10^{17})	T_c (10^6)	ρ_c	M_b	L_g $T_{ef.}$	q_k	M
4.1	0.900	0.010	1.9379	0.14193	1.3971	24.369	36.565	−0.610	4.158	0.1955	
4.2	0.700	0.040	2.3342	0.18844	0.77809	23.951	23.892	−0.918	4.148	0.1700	$4M_\odot$
4.3	0.650	0.040	2.3518	0.23982	0.72944	24.511	22.723	−1.180	4.173	0.1752	
4.4	0.650	0.045	2.3855	0.22561	0.70533	24.280	22.196	−1.113	4.163	0.1726	
5.1	0.900	0.010	2.2099	0.31742	1.1180	25.830	27.503	−1.484	4.217	0.2209	$5M_\odot$
5.2	0.650	0.040	2.6887	0.55688	0.58622	25.906	17.158	−2.094	4.235	0.2000	
8.1	0.900	0.010	2.9355	1.5907	0.69493	28.814	15.094	−3.234	4.330	0.2753	
8.2	0.700	0.040	3.5345	2.4168	0.40158	28.256	10.142	−3.688	4.335	0.2536	$8M_\odot$
8.3	0.650	0.040	3.5584	2.9915	0.37967	28.821	9.719	−3.920	4.357	0.2645	
8.4	0.650	0.045	3.6096	2.8805	0.36846	28.585	9.517	−3.879	4.349	0.2872	
10.1	0.900	0.010	3.3610	3.2820	0.56091	30.196	11.478	−4.020	4.379	0.3080	$10M_\odot$
10.2	0.650	0.040	4.0521	6.2910	0.31582	30.155	7.563	−4.729	4.409	0.3042	
16.1	0.900	0.010	4.4548	13.750	0.37667	32.985	6.749	−5.576	4.473	0.3841	
16.2	0.650	0.040	5.2769	26.303	0.22913	32.774	4.720	−6.280	4.507	0.4000	$16M_\odot$

Model No 4.3

Table 2.

INTEGRATION OUTWARDS

q	r	l	P (10^{17})	T (10^{6})	β	ρ	κ	ε	∇_r	∇_a
0.1050D–06	0.1260D–02	0.1934D–06	0.7294D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4547D 04	0.0698	0.3861
0.1150D–06	0.1299D–02	0.5802D–06	0.7294D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4547D 04	0.1911	0.3861
0.1350D–06	0.1370D–02	0.1354D–05	0.7294D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4547D 04	0.3798	0.3861
0.1750D–06	0.1494D–02	0.2901D–05	0.7294D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4547D 04	0.6278	0.3861
0.2550D–06	0.1694D–02	0.5995D–05	0.7294D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4546D 04	0.8903	0.3861
0.4150D–06	0.1992D–02	0.1218D–04	0.7294D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4545D 04	1.1117	0.3861
0.7350D–06	0.2411D–02	0.2455D–04	0.7293D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4544D 04	1.2651	0.3861
0.1375D–05	0.2970D–02	0.4928D–04	0.7293D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4541D 04	1.3575	0.3861
0.2655D–05	0.3699D–02	0.9871D–04	0.7292D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4537D 04	1.4083	0.3861
0.5215D–05	0.4633D–02	0.1974D–03	0.7290D 00	0.2451D 02	0.9875	0.2272D 02	0.4039D 00	0.4531D 04	1.4344	0.3861
0.1033D–04	0.5819D–02	0.3946D–03	0.7288D 00	0.2450D 02	0.9871	0.2271D 02	0.4039D 00	0.4521D 04	1.4467	0.3861
0.2057D–04	0.7321D–02	0.7877D–03	0.7284D 00	0.2450D 02	0.9875	0.2270D 02	0.4040D 00	0.4505D 04	1.4513	0.3861
0.4105D–04	0.9217D–02	0.1570D–02	0.7278D 00	0.2449D 02	0.9875	0.2269D 02	0.4041D 00	0.4480D 04	1.450^{9}	0.3861
0.8201D–04	0.1161D–01	0.3124D–02	0.7268D 00	0.2448D 02	0.9875	0.2267D 02	0.4042D 00	0.4440D 04	1.4464	0.3861
0.1639D–03	0.1463D–01	0.6196D–02	0.7253D 00	0.2446D 02	0.9876	0.2265D 02	0.4044D 00	0.4378D 04	1.4375	0.3861
0.3278D–03	0.1844D–01	0.1223D–01	0.7229D 00	0.2443D 02	0.9876	0.2260D 02	0.4047D 00	0.4280_{D} 04	1.4224	0.
0.6555D–03	0.2324D–01	0.2394D–01	0.7191D 00	0.2438D 02	0.9876	0.2253D 02	0.4052D 00	0.4130_{D} 04	1.3984	0.3862
0.1311D–02	0.2931D–01	0.4629D–01	0.7130D 00	0.2430D 02	0.9877	0.2241D 02	0.4060D 00	0.3901_{D} 04	1.3612	0.3862
0.2622D–02	0.3699D–01	0.8779D–01	0.7035D 00	0.2417D 02	0.9878	0.2223D 02	0.4073D 00	0.3561_{D} 04	1.3044	0.3863
0.5000D–02	0.4599D–01	0.1551D 00	0.6897D 00	0.2399D 02	0.9879	0.2196D 02	0.4092D 00	0.3116_{D} 04	1.2270	0.3865
0.1000D–01	0.5818D–01	0.2732D 00	0.6668D 00	0.2368D 02	0.9881	0.2152D 02	0.4126D 00	0.2483_{D} 04	1.1097	0.3867
0.2000D–01	0.7378D–01	0.4487D 00	0.6313D 00	0.2_{318}D 02	0.98_{85}	0.2_{08}2D 02	0.4183D 00	0.1717_{D} 04	0.9522	0.3871
0.5000D–01	0.1017D 00	0.7354D 00	0.5539D 00	0.2203D 02	0.9893	0.1923_{D} 02	0.4334D 00	0.7141_{D} 03	0.6950	0.3879
0.8000D–01	0.1205D 00	0.8629D 00	0.4952D 00	0.2110D 02	0.9899	0.1797_{D} 02	0.4481D 00	0.3385_{D} 03	0.5608	0.3886
0.1100D 00	0.1357D 00	0.9252D 00	0.4461D 00	0.2026D 02	0.9905	0.1687_{D} 02	0.4635D 00	0.1705_{D} 03	0.4793	0.3892
0.1400D 00	0.1488D 00	0.9572D 00	0.4034D 00	0.1948D 02	0.9910	0.1587_{D} 02	0.4800D 00	0.8934_{D} 02	0.4267	0.3898
0.1700D 00	0.1605D 00	0.9742D 00	0.3654D 00	0.1874D 02	0.9915	0.1495_{D} 02	0.4979D 00	0.4832_{D} 02	0.3921	0.3903
0.2000D 00	0.1714D 00	0.9835D 00	0.3312D 00	0.1806D 02	0.9919	0.1407_{D} 02	0.5166D 00	0.2734_{D} 02	0.3673	0.3907
0.2500D 00	0.1881D 00	0.9914D 00	0.2809D 00	0.1704D 02	0.9924	0.1265_{D} 02	0.5479D 00	0.1200D 02	0.3357	0.3913
0.3000D 00	0.2038D 00	0.9950D 00	0.2373D 00	0.1614D 02	0.9928	0.1129_{D} 02	0.5797D 00	0.6031D 01	0.3122	0.3917
0.3500D 00	0.2190D 00	0.9970D 00	0.1993D 00	0.1531D 02	0.9931	0.9996_{D} 01	0.6128D 0_{0}	0.3380D 01	0.2940	0.3920
0.4000D 00	0.2340D 00	0.9981D 00	0.1659D 00	0.1452D 02	0.9932	0.8773_{D} 01	0.6476_{D} 00	0.2052D 01	0.2795	0.3922

INTEGRATION INWARDS

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.1000D 01	0.9951D 00	0.1000D 01	0.4833D–11	0.4787D–01	0.9726	0.7594D–07	0.5247D 01	0.1684D–17	0.2241	0.3718
0.1000D 01	0.9827D 00	0.1000D 01	0.2519D–09	0.1217D 00	0.9780	0.1565D–05	0.4951D 01	0.1452D–14	0.2637	0.3767
0.1000D 01	0.9683D 00	0.1000D 01	0.2334D–08	0.2209D 00	0.9743	0.7960D–05	0.5429D 01	0.8010D–13	0.2469	0.3733
0.1000D 01	0.9541D 00	0.1000D 01	0.9775D–08	0.3055D 00	0.9775	0.2419D–04	0.4047D 01	0.8898D–12	0.2108	0.3762
0.1000D 01	0.9407D 00	0.1000D 01	0.2843D–07	0.3809D 00	0.9813	0.5665D–04	0.3273D 01	0.5036D–11	0.2052	0.3799
0.1000D 01	0.9281D 00	0.1000D 01	0.6691D–07	0.4549D 00	0.9839	0.1119D–03	0.2907D 01	0.2024D–10	0.2108	0.3824
0.1000D 01	0.9160D 00	0.1000D 01	0.1370D–06	0.5306D 00	0.9854	0.1967D–03	0.2738D 01	0.6590D–10	0.2195	0.3839
0.1000D 01	0.9042D 00	0.1000D 01	0.2542D–06	0.6093D 00	0.9863	0.3182D–03	0.2661D 01	0.1853D–09	0.2277	0.3848
0.9999D 00	0.8926D 00	0.1000D 01	0.4384D–06	0.6911D 00	0.9869	0.4841D–03	0.2625D 01	0.4665D–09	0.2342	0.3854
0.9999D 00	0.8812D 00	0.1000D 01	0.7145D–06	0.7757D 00	0.9872	0.7031D–03	0.2608D 01	0.1076D–08	0.2388	0.3858
0.9998D 00	0.8700D 00	0.1000D 01	0.1113D–05	0.8630D 00	0.9874	0.9847D–03	0.2598D 01	0.2307D–08	0.2420	0.3860
0.9998D 00	0.8589D 00	0.1000D 01	0.1671D–05	0.9526D 00	0.9876	0.1340D–02	0.2592D 01	0.4661D–08	0.2441	0.3861
0.9997D 00	0.8478D 00	0.1000D 01	0.2434D–05	0.1045D 01	0.9877	0.1780D–02	0.2588D 01	0.8951D–08	0.2456	0.3862
0.9996D 00	0.8369D 00	0.1000D 01	0.3456D–05	0.1139D 01	0.9877	0.2318D–02	0.2584D 01	0.1646D–07	0.2467	0.3863
0.9994D 00	0.8260D 00	0.1000D 01	0.4801D–05	0.1235D 01	0.9878	0.2969D–02	0.2581D 01	0.2917D–07	0.2473	0.3863
0.9993D 00	0.8152D 00	0.1000D 01	0.6543D–05	0.1333D 01	0.9878	0.3748D–02	0.2577D 01	0.5004D–07	0.2478	0.3864
0.9991D 00	0.8044D 00	0.1000D 01	0.8772D–05	0.1434D 01	0.9879	0.4673D–02	0.2573D 01	0.8344D–07	0.2480	0.3864
0.9988D 00	0.7937D 00	0.1000D 01	0.1159D–04	0.1536D 01	0.9879	0.5762D–02	0.2567D 01	0.1357D–06	0.2481	0.3864
0.9985D 00	0.7831D 00	0.1000D 01	0.1512D–04	0.1641D 01	0.9879	0.7038D–02	0.2560D 01	0.2157D–06	0.2480	0.3865
0.9982D 00	0.7726D 00	0.1000D 01	0.1950D–04	0.1748D 01	0.9879	0.8522D–02	0.2551D 01	0.3361D–06	0.2477	0.3865
0.9978D 00	0.7621D 00	0.1000D 01	0.2489D–04	0.1857D 01	0.9880	0.1024D–01	0.2540D 01	0.5144D–06	0.2474	0.3865
0.9973D 00	0.7517D 00	0.1000D 01	0.3148D–04	0.1968D 01	0.9880	0.1222D–01	0.2527D 01	0.7744D–06	0.2469	0.3866
0.9968D 00	0.7413D 00	0.1000D 01	0.3949D–04	0.2081D 01	0.9880	0.1450D–01	0.2512D 01	0.1149D–05	0.2462	0.3866
0.9962D 00	0.7310D 00	0.1000D 01	0.4916D–04	0.2196D 01	0.9881	0.1710D–01	0.2493D 01	0.1680D–05	0.2455	0.3866
0.9955D 00	0.7208D 00	0.1000D 01	0.6076D–04	0.2313D 01	0.9881	0.2007D–01	0.2473D 01	0.2427D–05	0.2446	0.3867
0.9947D 00	0.7107D 00	0.1000D 01	0.7463D–04	0.2432D 01	0.9882	0.2345D–01	0.2449D 01	0.3466D–05	0.2437	0.3868
0.9938D 00	0.7006D 00	0.1000D 01	0.9113D–04	0.2553D 01	0.9882	0.2727D–01	0.2423D 01	0.4897D–05	0.2426	0.3868
0.9929D 00	0.6906D 00	0.1000D 01	0.1107D–03	0.2676D 01	0.9883	0.3161D–01	0.2394D 01	0.6849D–05	0.2415	0.3869
0.9918D 00	0.6807D 00	0.1000D 01	0.1338D–03	0.2801D 01	0.9884	0.3649D–01	0.2363D 01	0.9492D–05	0.2403	0.3870
0.9905D 00	0.6709D 00	0.1000D 01	0.1609D–03	0.2928D 01	0.9885	0.4200D–01	0.2330D 01	0.1304D–04	0.2390	0.3871
0.9892D 00	0.6611D 00	0.1000D 01	0.1927D–03	0.3056D 01	0.9886	0.4819D–01	0.2295D 01	0.1777D–04	0.2377	0.3872
0.9877D 00	0.6514D 00	0.1000D 01	0.2299D–03	0.3187D 01	0.9887	0.5514D–01	0.2259D 01	0.2403D–04	0.2364	0.3873
0.9861D 00	0.6418D 00	0.1000D 01	0.2732D–03	0.3319D 01	0.9888	0.6292D–01	0.2220D 01	0.3227D–04	0.2351	0.3874
0.9843D 00	0.6323D 00	0.1000D 01	0.3235D–03	0.3454D 01	0.9889	0.7162D–01	0.2181D 01	0.4305D–04	0.2338	0.3875
0.9823D 00	0.6229D 00	0.1000D 01	0.3818D–03	0.3590D 01	0.9890	0.8144D–01	0.2141D 01	0.5706D–04	0.2325	0.3877

q	r	l	P (10^{17})	T (10^6)	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.9802D 00	0.6135D 00	0.1000D 01	0.4492D–03	0.3728D 01	0.9892	0.9217D–01	0.2100D 01	0.7519D–04	0.2313	0.3878
0.9778D 00	0.6043D 00	0.1000D 01	0.5270D–03	0.3867D 01	0.9893	0.1042D 00	0.2058D 01	0.9853D–04	0.2301	0.3879
0.9500D 00	0.5362D 00	0.1000D 01	0.1644D–02	0.5004D 01	0.9904	0.2516D 00	0.1742D 01	0.6663D–03	0.2231	0.3891
0.9000D 00	0.4644D 00	0.1000D 01	0.5251D–02	0.6469D 01	0.9916	0.6224D 00	0.1423D 01	0.4605D–02	0.2201	0.3904
0.8500D 00	0.4197D 00	0.1000D 01	0.1071D–01	0.7569D 01	0.9923	0.1086D 01	0.1241D 01	0.1505D–01	0.2210	0.3911
0.8000D 00	0.3865D 00	0.1000D 01	0.1810D–01	0.8504D 01	0.9927	0.1633D 01	0.1114D 01	0.3612D–01	0.2235	0.3916
0.7500D 00	0.3595D 00	0.1000D 01	0.2753D–01	0.9347D 01	0.9930	0.2262D 01	0.1017D 01	0.7303D–01	0.2270	0.3919
0.7000D 00	0.3365D 00	0.9999D 00	0.3916D–01	0.1013D 02	0.9932	0.2968D 01	0.9396D 00	0.1326D 00	0.2314	0.3922
0.6500D 00	0.3162D 00	0.9998D 00	0.5313D–01	0.1088D 02	0.9933	0.3750D 01	0.8745D 00	0.2238D 00	0.2365	0.3923
0.6000D 00	0.2978D 00	0.9997D 00	0.6964D–01	0.1161D 02	0.9934	0.4607D 01	0.8185D 00	0.3595D 00	0.2425	0.3924
0.5500D 00	0.2807D 00	0.9995D 00	0.8889D–01	0.1233D 02	0.9934	0.5539D 01	0.7691D 00	0.5590D 00	0.2496	0.3924
0.5000D 00	0.2646D 00	0.9992D 00	0.1111D 00	0.1305D 02	0.9934	0.6544D 01	0.7250D 00	0.8551D 00	0.2579	0.3924
0.4500D 00	0.2492D 00	0.9988D 00	0.1367D 00	0.1378D 02	0.9934	0.7622D 01	0.6847D 00	0.1310D 01	0.2677	0.3923
0.4000D 00	0.2340D 00	0.9981D 00	0.1659D 00	0.1452D 02	0.9932	0.8773D 01	0.6476D 00	0.2052D 01	0.2795	0.3922

Model No 5.2

Table 3.

INTEGRATION OUTWARDS

q	r	l	P (10^{17})	T 10^6)	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.1050D–06	0.1304D–02	0.1898D–06	0.5862D 00	0.2591D 02	0.9806	0.1716D 02	0.3781D 00	0.8290D 04	0.0767	0.3792
0.1150D–06	0.1344D–02	0.5694D–06	0.5862D 00	0.2591D 02	0.9806	0.1716D 02	0.3781D 00	0.8290D 04	0.2100	0.3792
0.1350D–06	0.1418D–02	0.1329D–05	0.5862D 00	0.2591D 02	0.9806	0.1716D 02	0.3781D 00	0.8290D 04	0.4175	0.3792
0.1750D–06	0.1546D–02	0.2847D–05	0.5862D 00	0.2591D 02	0.9806	0.1716D 02	0.3781D 00	0.8289D 04	0.6901	0.3792
0.2550D–06	0.1753D–02	0.5883D–05	0.5862D 00	0.2590D 02	0.9806	0.1716D 02	0.3781D 00	0.8288D 04	0.9788	0.3792
0.4150D–06	0.2062D–02	0 1196D–04	0 5862D 00	0.2590D 02	0.9806	0.1716D 02	0.3781D 00	0.8287D 04	1.2221	0.3792
0.7350D–06	0.2494D–02	0.2410D–04	0.5861D 00	0.2590D 02	0.9806	0.1716D 02	0.3781D 00	0.8284D 04	1.3908	0.3792
0.1375D–05	0.3074D–02	0.4837D–04	0.5861D 00	0.2590D 02	0.9806	0.1716D 02	0.3781D 00	0.8280D 04	1.4924	0.3792
0.2655D–05	0.3827D–02	0.9688D–04	0.5860D 00	0.2590D 02	0.9806	0.1715D 02	0.3781D 00	0.8273D 04	1.5482	0.3792
0.5215D–05	0.4793D–02	0.1938D–03	0.5859D 00	0.2590D 02	0.9806	0.1715D 02	0.3781D 00	0.8261D 04	1.5769	0.3792
0.1033D–04	0.6021D–02	0.3873D–03	0.5857D 00	0.2590D 02	0.9806	0.1715D 02	0.3781D 00	0.8244D 04	1.5904	0.3792

q	r	l	P (10^{17})	T (10^6)	β	ρ	$\varkappa$	ε	∇r	∇a
0.2057D–04	0.7575D–02	0.7731D–03	0.5854D 00	0.2589D 02	0.9806	0.1714D 02	0.3782D 00	0.8215D 04	1.5954	0.3792
0.4105D–04	0.9538D–02	0.1541D–02	0.5849D 00	0.2588D 02	0.9807	0.1713D 02	0.3782D 00	0.8170D 03	1.5950	0.3792
0.8201D–04	0.1201D*01	0.3067D*02	0.5841D 00	0.2587D 02	0.9807	0.1712D 02	0.3783D 00	0.8099D 04	1.5900	0.3792
0.1639D–03	0.1514D*01	0.6083D*02	0.5829D 00	0.2585D 02	0.9807	0.1710D 02	0.3784D 00	0.7988D 04	1.5801	0.3792
0.3278D–03	0.1908D*01	0.1201D*01	0.5810D 00	0.2582D 02	0.9807	0.1706D 02	0.3786D 00	0.7813D 04	1.5635	0.3793
0.6555D–03	0.2405D*01	0.2352D*01	0.5780D 00	0.2577D 02	0.9808	0.1701D 02	0.3790D 00	0.7544D 04	1.5370	0.3793
0.1311D–02	0.3033D*01	0.4551D*01	0.5731D 00	0.2568D 02	0.9809	0.1692D 02	0.3795D 00	0.7134D 04	1.4959	0.3794
0.2622D–02	0.3828D*01	0.8641D*01	0.5655D 00	0.2555D 02	0.9810	0.1679D 02	0.3804D 00	0.6525D 04	1.4331	0.3795
0.5000D–02	0.4758D*01	0.1529D 00	0.5545D 00	0.2536D 02	0.9812	0.1659D 02	0.3817D 00	0.5724D 04	1.3475	0.3797
0.1000D–01	0.6020D*01	0.2699D 00	0.5363D 00	0.2504D 02	0.9815	0.1625D 02	0.3840D 00	0.4581D 04	1.2176	0.3800
0.2000D–01	0.7634D*01	0.4448D 00	0.5079D 00	0.2453D 02	0.9820	0.1572D 02	0.3878D 00	0.3190D 04	1.0426	0.3805
0.5000D–01	0.1052D 00	0.7334D 00	0.4462D 00	0.2335D 02	0.9832	0.1453D 02	0.3981D 00	0.1346D 04	0.7554	0.3817
0.8000D–01	0.1247D 00	0.8634D 00	0.3993D 00	0.2238D 02	0.9842	0.1358D 02	0.4081D 00	0.6434D 03	0.6042	0.3826
0.1100D 00	0.1404D 00	0.9272D 00	0.3601D 00	0.2151D 02	0.9850	0.1275D 02	0.4185D 00	0.3250D 03	0.5113	0.3835
0.1400D 00	0.1539D 00	0.9599D 00	0.3260D 00	0.2070D 02	0.9858	0.1200D 02	0.4297D 00	0.1695D 03	0.4504	0.3843
0.1700D 00	0.1661D 00	0.9772D 00	0.2957D 00	0.1994D 02	0.9865	0.1131D 02	0.4418D 00	0.9034D 02	0.4093	0.3850
0.2000D 00	0.1773D 00	0.9865D 00	0.2683D 00	0.1921D 02	0.9872	0.1066D 02	0.4552D 00	0.4910D 02	0.3812	0.3857
0.2500D 00	0.1945D 00	0.9937D 00	0.2281D 00	0.1811D 02	0.9881	0.9623D 01	0.4783D 00	0.1944D 02	0.3475	0.3867
0.3000D 00	0.2106D 00	0.9967D 00	0.1932D 00	0.1713D 02	0.9888	0.8621D 01	0.5019D 00	0.8688D 01	0.3224	0.3874
0.3500D 00	0.2262D 00	0.9982D 00	0.1626D 00	0.1623D 02	0.9892	0.7662D 01	0.5265D 00	0.4335D 01	0.3030	0.3879
0.4000D 00	0.2415D 00	0.9989D 00	0.1358D 00	0.1539D 02	0.9896	0.6749D 01	0.5524D 00	0.2386D 01	0.2876	0.3882

INTEGRATION INWARDS

q	r	l	P (10^{17})	T (10^6)	β	ρ	$\varkappa$	ε	∇r	∇a
0.1000D 01	0.9956D 00	0.1000D 01	0.4458D–11	0.5055D–01	0.9631	0.6568D–07	0.3847D 01	0.1812D–17	0.2264	0.3637
0.1000D 01	0.9835D 00	0.1000D 01	0.2298D–09	0.1296D 00	0.9690	0.1328D–05	0.3819D 01	0.1585D–14	0.2678	0.3686
0.1000D 01	0.9693D 00	0.1000D 01	0.2127D–08	0.2337D 00	0.9646	0.6788D–05	0.3900D 01	0.8559D–13	0.2396	0.3650
0.1000D 01	0.9555D 00	0.1000D 01	0.8897D–08	0.3209D 00	0.9699	0.2079D–04	0.2892D 01	0.9320D–12	0.2091	0.3694
0.1000D 01	0.9425D 00	0.1000D 01	0.2585D–07	0.4001D 00	0.9750	0.4870D–04	0.2382D 01	0.5274D–11	0.2071	0.3739
0.1000D 01	0.9303D 00	0.1000D 01	0.6073D–07	0.4789D 00	0.9782	0.9593D–04	0.2155D 01	0.2131D–10	0.2145	0.3768
0.1000D 01	0.9185D 00	0.1000D 01	0.1242D–06	0.5601D 00	0.9800	0.1680D–03	0.2056D 01	0.6986D–10	0.2237	0.3786
0.1000D 01	0.9070D 00	0.1000D 01	0.2302D–06	0.6446D 00	0.9811	0.2709D–03	0.2015D 01	0.1975D–09	0.2316	0.3796

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ϵ	∇r	∇a
0.9999D 00	0.8957D 00	0.1000D 01	0.3964D–06	0.7322D 00	0.9817	0.4110D–03	0.1996D 01	0.4992D–09	0.2373	0.3802
0.9999D 00	0.8846D 00	0.1000D 01	0.6453D–06	0.8228D 00	0.9821	0.5955D–03	0.1988D 01	0.1153D–08	0.2412	0.3806
0.9998D 00	0.8735D 00	0.1000D 01	0.1004D–05	0.9160D 00	0.9823	0.8326D–03	0.1984D 01	0.2477D–08	0.2439	0.3808
0.9998D 00	0.8626D 00	0.1000D 01	0.1506D–05	0.1012D 01	0.9825	0.1131D–02	0.1981D 01	0.5005D–08	0.2457	0.3810
0.9997D 00	0.8517D 00	0.1000D 01	0.2192D–05	0.1110D 01	0.9826	0.1501D–02	0.1980D 01	0.9611D–08	0.2469	0.3811
0.9996D 00	0.8410D 00	0.1000D 01	0.3109D–05	0.1210D 01	0.9826	0.1953D–02	0.1978D 01	0.1767D–07	0.2477	0.3811
0.9994D 00	0.8302D 00	0.1000D 01	0.4314D–05	0.1312D 01	0.9827	0.2498D–02	0.1977D 01	0.3128D–07	0.2482	0.3812
0.9993D 00	0.8196D 00	0.1000D 01	0.5874D–05	0.1417D 01	0.9827	0.3151D–02	0.1975D 01	0.5361D–07	0.2485	0.3812
0.9991D 00	0.8090D 00	0.1000D 01	0.7868D–05	0.1523D 01	0.9827	0.3925D–02	0.1972D 01	0.8929D–07	0.2486	0.3812
0.9988D 00	0.7985D 00	0.1000D 01	0.1039D–04	0.1632D 01	0.9828	0.4836D–02	0.1968D 01	0.1450D–06	0.2485	0.3813
0.9985D 00	0.7880D 00	0.1000D 01	0.1354D–04	0.1743D 01	0.9828	0.5901D–02	0.1963D 01	0.2302D–06	0.2483	0.3813
0.9982D 00	0.7777D 00	0.1000D 01	0.1744D–04	0.1856D 01	0.9828	0.7140D–02	0.1956D 01	0.3583D–06	0.2480	0.3813
0.9978D 00	0.7673D 00	0.1000D 01	0.2224D–04	0.1972D 01	0.9829	0.8573D–02	0.1947D 01	0.5475D–06	0.2475	0.3814
0.9973D 00	0.7571D 00	0.1000D 01	0.2811D–04	0.2089D 01	0.9829	0.1022D–01	0.1936D 01	0.8229D–06	0.2469	0.3814
0.9968D 00	0.7469D 00	0.1000D 01	0.3522D–04	0.2209D 01	0.9830	0.1212D–01	0.1923D 01	0.1218D–05	0.2462	0.3815
0.9962D 00	0.7367D 00	0.1000D 01	0.4379D–04	0.2330D 01	0.9830	0.1429D–01	0.1909D 01	0.1779D–05	0.2453	0.3815
0.9955D 00	0.7266D 00	0.1000D 01	0.5408D–04	0.2454D 01	0.9831	0.1675D–01	0.1892D 01	0.2566D–05	0.2444	0.3816
0.9947D 00	0.7166D 00	0.1000D 01	0.6636D–04	0.2579D 01	0.9832	0.1956D–01	0.1873D 01	0.3657D–05	0.2434	0.3817
0.9938D 00	0.7067D 00	0.1000D 01	0.8094D–04	0.2707D 01	0.9833	0.2274D–01	0.1852D 01	0.5156D–05	0.2423	0.3818
0.9929D 00	0.6969D 00	0.1000D 01	0.9820D–04	0.2836D 01	0.9834	0.2633D–01	0.1829D 01	0.7197D–05	0.2411	0.3819
0.9918D 00	0.6871D 00	0.1000D 01	0.1185D–03	0.2967D 01	0.9835	0.3038D–01	0.1805D 01	0.9953D–05	0.2399	0.3820
0.9905D 00	0.6774D 00	0.1000D 01	0.1424D–03	0.3101D 01	0.9836	0.3494D–01	0.1779D 01	0.1365D–04	0.2386	0.3821
0.9892D 00	0.6677D 00	0.1000D 01	0.1704D–03	0.3236D 01	0.9838	0.4006D–01	0.1752D 01	0.1856D–04	0.2373	0.3823
0.9877D 00	0.6582D 00	0.1000D 01	0.2031D–03	0.3373D 01	0.9839	0.4580D–01	0.1724D 01	0.2505D–04	0.2361	0.3824
0.9861D 00	0.6487D 00	0.1000D 01	0.2410D–03	0.3512D 01	0.9841	0.5222D–01	0.1695D 01	0.3356D–04	0.2348	0.3826
0.9843D 00	0.6393D 00	0.1000D 01	0.2851D–03	0.3653D 01	0.9843	0.5940D–01	0.1666D 01	0.4468D–04	0.2336	0.3827
0.9823D 00	0.6300D 00	0.1000D 01	0.3361D–03	0.3796D 01	0.9844	0.6740D–01	0.1636D 01	0.5910D–04	0.2324	0.3829
0.9802D 00	0.6208D 00	0.1000D 01	0.3950D–03	0.3940D 01	0.9846	0.7631D–01	0.1605D 01	0.7772D–04	0.2313	0.3831
0.9778D 00	0.6117D 00	0.1000D 01	0.4628D–03	0.4087D 01	0.9848	0.8622D–01	0.1575D 01	0.1016D–03	0.2302	0.3833
0.9500D 00	0.5444D 00	0.1000D 01	0.1429D–02	0.5280D 01	0.9863	0.2064D 00	0.1346D 01	0.6778D–03	0.2245	0.3848
0.9000D 00	0.4733D 00	0.1000D 01	0.4507D–02	0.6823D 01	0.9879	0.5046D 00	0.1118D 01	0.4621D–02	0.2227	0.3864
0.8500D 00	0.4288D 00	0.1000D 01	0.9112D–02	0.7985D 01	0.9888	0.8724D 00	0.9873D 00	0.1499D–01	0.2244	0.3874
0.8000D 00	0.3955D 00	0.1000D 01	0.1529D–01	0.8975D 01	0.9893	0.1303D 01	0.8958D 00	0.3576D–01	0.2275	0.3879
0.7500D 00	0.3685D 00	0.1000D 01	0.2313D–01	0.9868D 01	0.9897	0.1794D 01	0.8256D 00	0.7204D–01	0.2314	0.3883
0.7000D 00	0.3454D 00	0.1000D 01	0.3273D–01	0.1070D 02	0.9899	0.2341D 01	0.7688D 00	0.1306D 00	0.2362	0.3886
0.6500D 00	0.3250D 00	0.9999D 00	0.4422D–01	0.1150D 02	0.9900	0.2944D 01	0.7209D 00	0.2207D 00	0.2417	0.3887
0.6000D 00	0.3064D 00	0.9999D 00	0.5773D–01	0.1228D 02	0.9901	0.3600D 01	0.6795D 00	0.3565D 00	0.2482	*0.3888*

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.5500D 00	0.2891D 00	0.9997D 00	0.7343D-01	0.1304D 02	0.9901	0.4310D 01	0.6429D 00	0.5621D 00	0.2557	0.3888
0.5000D oo	0.2727D 00	0.9996D 00	0.9151D-01	0.1381D 02	0.9900	0.5072D 01	0.6101D 00	0.8832D 00	0.2645	0.3887
0.4500D 00	0.2570D 00	0.9993D 00	0.1122D 00	0.1459D 02	0.9898	0.5886D 01	0.5801D 00	0.1417D 01	0.2750	0.3885
0.4000D 00	0.2415D 00	0.9989D 00	0.1358D 00	0.1539D 02	0.9896	0.6749D 01	0.5524D 00	0.2386D 01	0.2876	0.3882

Model No 8.3

Table 4.

INTEGRATION OUTWARDS

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.1050D-06	0.1393D-02	0.1759D-06	0.3797D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2579D 05	0.0925	0.3569
0.1150D-06	0.1436D-02	0.5276D-06	0.3797D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2579D 05	0.2534	0.3569
0.1350D-06	0.1514D-02	0.1231D-05	0.3797D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2579D 05	0.5037	0.3569
0.1750D-06	0.1651D-02	0.2638D-05	0.3796D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2578D 05	0.8326	0.3569
0.2550D-06	0.1872D-02	0.5451D-05	0.3796D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2578D 05	1.1809	0.3569
0.4150D-06	0.2202D-02	0.1108D-04	0.3796D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2578D 05	1.4745	0.3569
0.7350D-06	0.2664D-02	0.2232D-04	0.3796D 00	0.2882D 02	0.9542	0.9719D 01	0.3469D 00	0.2577D 05	1.6780	0.3569
0.1375D-05	0.3283D-02	0.4481D-04	0.3796D 00	0.2882D 02	0.9542	0.9718D 01	0.3469D 00	0.2576D 05	1.8006	0.3569
0.2655D-05	0.4088D-02	0.8976D-04	0.3795D 00	0.2882D 02	0.9542	0.9717D 01	0.3469D 00	0.2574D 05	1.8679	0.3569
0.5215D-05	0.5120D-02	0.1796D-03	0.3795D 00	0.2881D 02	0.9542	0.9716D 01	0.3469D 00	0.2570D 05	1.9026	0.3569
0.1033D-04	0.6431D-02	0.3589D-03	0.3793D 00	0.2881D 02	0.9542	0.9714D 01	0.3469D 00	0.2565D 05	1.9190	0.3569
0.2057D-04	0.8091D-02	0.7165D-03	0.3791D 00	0.2881D 02	0.9542	0.9711D 01	0.3469D 00	0.2557D 05	1.9250	0.3569
0.4105D-04	0.1019D-01	0.1429D-02	0.3788D 00	0.2880D 02	0.9542	0.9706D 01	0.3469D 00	0.2544D 05	1.9246	0.3569
0.8201D-04	0.1283D-01	0.2844D-02	0.3783D 00	0.2878D 02	0.9543	0.9698D 01	0.3470D 00	0.2523D 05	1.9187	0.3569
0.1639D-03	0.1617D-01	0.5643D-02	0.3776D 00	0.2876D 02	0.9543	0.9686D 01	0.3470D 00	0.2490D 05	1.9070	0.3570
0.3278D-03	0.2038D-01	0.1115D-01	0.3763D 00	0.2873D 02	0.9544	0.9666D 01	0.3471D 00	0.2439D 05	1.8872	0.3570
0.6555D-03	0.2569D-01	0.2186D-01	0.3744D 00	0.2868D 02	0.9545	0.9635D 01	0.3472D 00	0.2360D 05	1.8557	0.3571
0.1311D-02	0.3240D-01	0.4239D-01	0.3713D 00	0.2859D 02	0.9546	0.9585D 01	0.3475D 00	0.2239D 05	1.8067	0.3572
0.2622D-02	0.4089D-01	0.8072D-01	0.3664D 00	0.2846D 02	0.9549	0.9506D 01	0.3478D 00	0.2058D 05	1.7318	0.3574
0.5000D-02	0.5083D-01	0.1434D 00	0.3593D 00	0.2826D 02	0.9553	0.9392D 01	0.3483D 00	0.1820D 05	1.6293	0.3577
0.1000D-01	0.6430D-01	0.2550D 00	0.3476D 00	0.2793D 02	0.9559	0.9201D 01	0.3493D 00	0.1476D 05	1.4730	0.3581
0.2000D-01	0.8155D-01	0.4245D 00	0.3295D 00	0.2739D 02	0.9569	0.8899D 01	0.3509D 00	0.1049D 05	1.2610	0.3589
0.5000D-01	0.1124D 00	0.7137D 00	0.2899D 00	0.2616D 02	0.9593	0.8220D 01	0.3350D 00	0.4650D 04	0.9077	0.3607
0.8000D-01	0.1333D 00	0.8499D 00	0.2599D 00	0.2515D 02	0.9612	0.7681D 01	0.3591D 00	0.2313D 04	0.7174	0.3622

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.1100D 00	0.1500D 00	0.9193D 00	0.2348D 00	0.2424D 02	0.9629	0.7212D 01	0.3633D 00	0.1208D 04	0.5978	0.3636
0.1400D 00	0.1644D 00	0.9559D 00	0.2130D 00	0.2339D 02	0.9646	0.6790D 01	0.3679D 00	0.6467D 03	0.5171	0.3646
0.1700D 00	0.1774D 00	0.9757D 00	0.1935D 00	0.2259D 02	0.9661	0.6401D 01	0.3728D 00	0.3511D 03	0.4603	0.3662
0.2000D 00	0.1894D 00	0.9865D 00	0.1761D 00	0.2182D 02	0.9676	0.6037D 01	0.3781D 00	0.1919D 03	0.4195	0.3674
0.2500D 00	0.2078D 00	0.9948D 00	0.1503D 00	0.2058D 02	0.9699	0.5476D 01	0.3884D 00	0.7055D 02	0.3747	0.3694
0.3000D 00	0.2249D 00	0.9978D 00	0.1279D 00	0.1942D 02	0.9719	0.4948D 01	0.4002D 00	0.2669D 02	0.3463	0.3712
0.3500D 00	0.2412D 00	0.9990D 00	0.1082D 00	0.1837D 02	0.9735	0.4435D 01	0.4126D 00	0.1082D 02	0.3242	0.3726
0.4000D 00	0.2573D 00	0.9995D 00	0.9085D-01	0.1738D 02	0.9747	0.3939D 01	0.4259D 00	0.4716D 01	0.3066	0.3736

INTEGRATION INWARDS

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.1000D 01	0.9967D 00	0.1000D 01	0.3849D-11	0.5628D-01	0.9343	0.4941D-07	0.2185D 01	0.2094D-17	0.2426	0.3434
0.1000D 01	0.9852D 00	0.1000D 01	0.1907D-09	0.1473D 00	0.9378	0.9391D-06	0.2318D 01	0.1866D-14	0.2720	0.3457
0.1000D 01	0.9714D 00	0.1000D 01	0.1761D-08	0.2604D 00	0.9342	0.4887D-05	0.2056D 01	0.9489D-13	0.2280	0.3434
0.1000D 01	0.9583D 00	0.1000D 01	0.7351D-08	0.3544D 00	0.9459	0.1517D-04	0.1550D 01	0.1011D-11	0.2090	0.3510
0.1000D 01	0.9462D 00	0.1000D 01	0.2130D-07	0.4432D 00	0.9543	0.3546D-04	0.1335D 01	0.5779D-11	0.2133	0.3570
0.1000D 01	0.9346D 00	0.1000D 01	0.4991D-07	0.5336D 00	0.9591	0.0937D-04	0.1252D 01	0.2376D-10	0.2232	0.3606
0.1000D 01	0.9234D 00	0.1000D 01	0.1018D-06	0.6276D 00	0.9616	0.1206D-03	0.1222D 01	0.7905D-10	0.2321	0.3625
0.1000D 01	0.9124D 00	0.1000D 01	0.1882D-06	0.7253D 00	0.9629	0.1932D-03	0.1212D 01	0.2259D-09	0.2385	0.3636
0.9999D 00	0.9016D 00	0.1000D 01	0.3235D-06	0.8263D 00	0.9637	0.2917D-03	0.1208D 01	0.5745D-09	0.2426	0.3642
0.9999D 00	0.8909D 00	0.1000D 01	0.5255D-06	0.9302D 00	0.9641	0.4211D-03	0.1207D 01	0.1332D-08	0.2453	0.3645
0.9998D 00	0.8803D 00	0.1000D 01	0.8160D-06	0.1037D 01	0.9643	0.5870D-03	0.1207D 01	0.2864D-08	0.2470	0.3647
0.9998D 00	0.8698D 00	0.1000D 01	0.1222D-05	0.1146D 01	0.9645	0.7954D-03	0.1208D 01	0.5787D-08	0.2481	0.3648
0.9997D 00	0.8593D 00	0.1000D 01	0.1775D-05	0.1257D 01	0.9645	0.1053D-02	0.1209D 01	0.1110D-07	0.2488	0.3649
0.9996D 00	0.8489D 00	0.1000D 01	0.2512D-05	0.1371D 01	0.9646	0.1367D-02	0.1209D 01	0.2038D-07	0.2492	0.3650
0.9994D 00	0.8385D 00	0.1000D 01	0.3480D-05	0.1487D 01	0.9646	0.1746D-02	0.1209D 01	0.3602D-07	0.2494	0.3650
0.9993D 00	0.8282D 00	0.1000D 01	0.4730D-05	0.1605D 01	0.9646	0.2198D-02	0.1208D 01	0.6160D-07	0.2494	0.3650
0.9991D 00	0.8179D 00	0.1000D 01	0.6324D-05	0.1725D 01	0.9647	0.2734D-02	0.1206D 01	0.1023D-06	0.2493	0.3650
0.9988D 00	*0.8077D 00*	*0.1000D 01*	*0.8333D-05*	*0.1848D 01*	*0.9647*	*0.3363D-02*	*0.1203D 01*	*0.1658D-06*	*0.2490*	*0.3650*
0.9985D 00	0.7976D 00	0.1000D 01	0.1084D-04	0.1973D 01	0.9647	0.4098D-02	0.1199D 01	0.2624D-06	0.2486	0.3651
0.9982D 00	0.7875D 00	0.1000D 01	0.1394D-04	0.2100D 01	0.9648	0.4952D-02	0.1194D 01	0.4071D-06	0.2480	0.3651
0.9978D 00	0.7775D 00	0.1000D 01	0.1775D-04	0.2230D 01	0.9649	0.5938D-02	0.1187D 01	0.6201D-06	0.2473	0.3652

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.9973D 00	0.7675D 00	0.1000D 01	0.2238D–04	0.2361D 01	0.9650	0.7073D–02	0.1180D 01	0.9288D–06	0.2465	0.3653
0.9968D 00	0.7576D 00	0.1000D 01	0.2799D–04	0.2495D 01	0.9651	0.8373D–02	0.1171D 01	0.1370D–05	0.2456	0.3654
0.9962D 00	0.7478D 00	0.1000D 01	0.3474D–04	0.2630D 01	0.9653	0.9858D–02	0.1160D 01	0.1994D–05	0.2446	0.3655
0.9955D 00	0.7380D 00	0.1000D 01	0.4282D–04	0.2768D 01	0.9654	0.1155D–01	0.1149D 01	0.2864D–05	0.2436	0.3656
0.9947D 00	0.7283D 00	0.1000D 01	0.5243D–04	0.2908D 01	0.9656	0.1346D–01	0.1136D 01	0.4067D–05	0.2425	0.3658
0.9938D 00	0.7186D 00	0.1000D 01	0.6383D–04	0.3050D 01	0.9658	0.1563D–01	0.1123D 01	0.5712D–05	0.2413	0.3660
0.9929D 00	0.7091D 00	0.1000D 01	0.7728D–04	0.3193D 01	0.9661	0.1808D–01	0.1108D 01	0.7942D–04	0.2402	0.3662
0.9918D 00	0.6996D 00	0.1000D 01	0.9310D–04	0.3339D 01	0.9663	0.2083D–01	0.1093D 01	0.1094D–04	0.2390	0.3664
0.9905D 00	0.6902D 00	0.1000D 01	0.1116D–03	0.3486D 01	0.9666	0.2393D–01	0.1077D 01	0.1494D–04	0.2378	0.3666
0.9892D 00	0.6808D 00	0.1000D 01	0.1332D–03	0.3636D 01	0.9669	0.2740D–01	0.1061D 01	0.2023D–04	0.2367	0.3669
0.9877D 00	0.6715D 00	0.1000D 01	0.1584D–03	0.3788D 01	0.9672	0.3128D–01	0.1045D 01	0.2720D–04	0.2356	0.3671
0.9861D 00	0.6623D 00	0.1000D 01	0.1876D–03	0.3941D 01	0.9676	0.3561D–01	0.1028D 01	0.3631D–04	0.2346	0.3674
0.9843D 00	0.6532D 00	0.1000D 01	0.2214D–03	0.4097D 01	0.9679	0.4044D–01	0.1011D 01	0.4815D–04	0.2336	0.3677
0.9823D 00	0.6442D 00	0.1000D 01	0.2604D–03	0.4255D 01	0.9683	0.4581D–01	0.9942D 00	0.6345D–04	0.2327	0.3680
0.9802D 00	0.6352D 00	0.1000D 01	0.3053D–03	0.4415D 01	0.9686	0.5178D–01	0.9773D 00	0.8313D–04	0.2318	0.3683
0.9778D 00	0.6263D 00	0.1000D 01	0.3568D–03	0.4577D 01	0.9690	0.5840D–01	0.9605D 00	0.1083D–03	0.2310	0.3686
0.9500D 00	0.5609D 00	0.1000D 01	0.1080D–02	0.5900D 01	0.9717	0.1375D 00	0.8389D 00	0.7040D–03	0.2277	0.3710
0.9000D 00	0.4912D 00	0.1000D 01	0.3321D–02	0.7619D 01	0.9744	0.3284D 00	0.7206D 00	0.4677D–02	0.2283	0.3734
0.8500D 00	0.4472D 00	0.1000D 01	0.6597D–02	0.8920D 01	0.9758	0.5580D 00	0.6527D 00	0.1494D–01	0.2315	0.3746
0.8000D 00	0.4141D 00	0.1000D 01	0.1092D–01	0.1003D 02	0.9766	0.8217D 00	0.6051D 00	0.3530D–01	0.2358	0.3754
0.7500D 00	0.3871D 00	0.1000D 01	0.1633D–01	0.1104D 02	0.9770	0.1117D 01	0.5684D 00	0.7081D–01	0.2408	0.3758
0.7000D 00	0.3638D 00	0.1000D 01	0.2287D–01	0.1199D 02	0.9772	0.1442D 01	0.5386D 00	0.1289D 00	0.2466	0.3760
0.6500D 00	0.3431D 00	0.1000D 01	0.3062D–01	0.1289D 02	0.9772	0.1795D 01	0.5135D 00	0.2219D 00	0.2533	0.3760
0.6000D 00	0.3241D 00	0.1000D 01	0.3966D–01	0.1378D 02	0.9771	0.2174D 01	0.4918D 00	0.3743D 00	0.2609	0.3758
0.5500D 00	0.3064D 00	0.9999D 00	0.5007D–01	0.1466D 02	0.9767	0.2580D 01	0.4727D 00	0.6405D 00	0.2697	0.3755
0.5000D 00	0.2896D 00	0.9999D 00	0.6198D–01	0.1554D 02	0.9763	0.3010D 01	0.4556D 00	0.1151D 01	0.2800	0.3751
0.4500D 00	0.2733D 00	0.9998D 00	0.7551D–01	0.1645D 02	0.9756	0.3464D 01	0.4401D 00	0.2231D 01	0.2921	0.3744
0.4000D 00	0.2573D 00	0.9995D 00	0.9085D–01	0.1738D 02	0.9747	0.3939D 01	0.4259D 00	0.4716D 01	0.3066	0.3736

Model No 10.2 Table 5.

INTEGRATION OUTWARDS

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.1050D–06	0.1432D–02	0.1678D–06	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4139D 05	0.1007	0.3433
0.1150D–06	0.1476D–02	0.5033D–06	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4139D 05	0.2759	0.3433
0.1350D–06	0.1558D–02	0.1174D–05	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4139D 05	0.5484	0.3433

q	r	l	P (10^{17})	T (10^6)	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.1750D–06	0.1698D–02	0.2516D–05	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4138D 05	0.9066	0.3433
0.2550D–06	0.1925D–02	0.5200D–05	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4138D 05	1.2857	0.3433
0.4150D–06	0.2265D–02	0.1057D–04	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4137D 05	1.6054	0.3433
0.7350D–06	0.2740D–02	0.2130D–04	0.3158D 00	0.3015D 02	0.9340	0.7563D 01	0.3390D 00	0.4136D 05	0.8270	0.3433
0.1375D–05	0.3376D–02	0.4275D–04	0.3157D 00	0.3015D 02	0.9340	0.7562D 01	0.3390D 00	0.4134D 05	1.9604	0.3433
0.2655D–05	0.4204D–02	0.8563D–04	0.3157D 00	0.3015D 02	0.9340	0.7562D 01	0.3390D 00	0.4131D 05	2.0338	0.3433
0.5215D–05	0.5266D–02	0.1713D–03	0.3156D 00	0.3015D 02	0.9340	0.7561D 01	0.3390D 00	0.4126D 05	2.0715	0.3433
0.1033D–04	0.6614D–02	0.3424D–03	0.3155D 00	0.3015D 02	0.9340	0.7559D 01	0.3390D 00	0.4118D 05	2.0894	0.3433
0.2057D–04	0.8321D–02	0.6836D–03	0.3154D 00	0.3014D 02	0.9340	0.7557D 01	0.3391D 00	0.4105D 05	2.0961	0.3433
0.4105D–04	0.1048D–01	0.1363D–02	0.3151D 00	0.3013D 02	0.9340	0.7553D 01	0.3391D 00	0.4084D 05	2.0956	0.3433
0.8201D–04	0.1320D–01	0.2714D–02	0.3147D 00	0.3012D 02	0.9341	0.7547D 01	0.3391D 00	0.4052D 05	2.0894	0.3433
0.1639D–03	0.1663D–01	0.5387D–02	0.3141D 00	0.3010D 02	0.9341	0.7537D 01	0.3391D 00	0.4001D 05	2.0768	0.3443
0.3278D–03	0.2096D–01	0.1065D–01	0.3130D 00	0.3006D 02	0.9342	0.7521D 01	0.3392D 00	0.3922D 05	2.0556	0.3434
0.6555D–03	0.2642D–01	0.2089D–01	0.3114D 00	0.3001D 02	0.9343	0.7497D 01	0.3393D 00	0.3799D 05	2.0218	0.3435
0.1311D–02	0.3332D–01	0.4055D–01	0.3088D 00	0.2992D 02	0.9345	0.7458D 01	0.3394D 00	0.3611D 05	1.9692	0.3436
0.2622D–02	0.4205D–01	0.7735D–01	0.3048D 00	0.2979D 02	0.9349	0.7396D 01	0.3396D 00	0.3329D 05	1.8886	0.3438
0.5000D–02	0.5228D–01	0.1378D 00	0.2989D 00	0.2959D 02	0.9353	0.7306D 01	0.3400D 00	0.2956D 05	1.7782	0.3441
0.1000D–01	0.6614D–01	0.2458D 00	0.2892D 00	0.2926D 02	0.9361	0.7156D 01	0.3406D 00	0.2414D 05	1.6094	0.3446
0.2000D–01	0.8389D–01	0.4117D 00	0.2741D 00	0.2872D 02	0.9374	0.6919D 01	0.3416D 00	0.1737D 05	1.3795	0.3454
0.5000D–01	0.1157D 00	0.6999D 00	0.2413D 00	0.2748D 02	0.9404	0.6386D 01	0.3443D 00	0.7918D 04	0.9931	0.3473
0.8000D–01	0.1371D 00	0.8392D 00	0.2164D 00	0.2646D 02	0.9429	0.5964D 01	0.3469D 00	0.4035D 04	0.7826	0.3490
0.1100D 00	0.1543D 00	0.9119D 00	0.1956D 00	0.2554D 02	0.9452	0.5598D 01	0.3496D 00	0.2154D 04	0.6489	0.3505
0.1400D 00	0.1692D 00	0.9512D 00	0.1775D 00	0.2468D 02	0.9473	0.5268D 01	0.3524D 00	0.1178D 04	0.5576	0.3519
0.1700D 00	0.1826D 00	0.9728D 00	0.1615D 00	0.2387D 02	0.9493	0.4965D 01	0.3555D 00	0.6522D 03	0.4926	0.3533
0.2000D 00	0.1949D 00	0.9848D 00	0.1470D 00	0.2309D 02	0.9512	0.4682D 01	0.3589D 00	0.3630D 03	0.4450	0.3547
0.2500D 00	0.2139D 00	0.9942D 00	0.1256D 00	0.2184D 02	0.9544	0.4246D 01	0.3653D 00	0.1367D 03	0.3909	0.3570
0.3000D 00	0.2315D 00	0.9978D 00	0.1071D 00	0.2062D 02	0.9574	0.3844D 01	0.3730D 00	0.5106D 02	0.3577	0.3593
0.3500D 00	0.2483D 00	0.9991D 00	0.9081D–01	0.1948D 02	0.9600	0.3460D 01	0.3817D 00	0.1950D 02	0.3346	0.3613
0.4000D 00	0.2647D 00	0.9996D 00	0.7642D–01	0.1842D 02	0.9620	0.3087D 01	0.3911D 00	0.7832D 01	0.3160	0.3629

INTEGRATION INWARDS

q	r	l	P (10^{17})	T (10^6)	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.1000D 01	0.9972D 00	0.1000D 01	0.3672D–11	0.5866D–01	0.9187	0.4446D–07	0.1795D 01	0.2225D–17	0.2710	0.3344
0.1000D 01	0.9859D 00	0.1000D 01	0.1769D–09	0.1561D 00	0.9154	0.8020D–06	0.1873D 01	0.2011D–14	0.2717	0.3327
0.1000D 01	0.9723D 00	0.1000D 01	0.1631D–08	0.2731D 00	0.9140	0.4221D–05	0.1572D 01	0.9927D–13	0.2243	0.3319

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.1000D 01	0.9596D 00	0.1000D 01	0.6802D–08	0.3712D 00	0.9296	0.1317D–04	0.1206D 01	0.1056D–11	0.2104	0.3406
0.1000D 01	0.9478D 00	0.1000D 01	0.1968D–07	0.4653D 00	0.9399	0.3074D–04	0.1062D 01	0.6090D–11	0.2170	0.3470
0.1000D 01	0.9365D 00	0.1000D 01	0.4607D–07	0.5621D 00	0.9454	0.5992D–04	0.1012D 01	0.2527D–10	0.2274	0.3506
0.1000D 01	0.9256D 00	0.1000D 01	0.9387D–07	0.6628D 00	0.9482	0.1038D–03	0.9951D 00	0.8466D–10	0.2357	0.3526
0.1000D 01	0.9148D 00	0.1000D 01	0.1734D–06	0.7673D 00	0.9496	0.1659D–03	0.9901D 00	0.2430D–09	0.2412	0.3536
0.9999D 00	0.9042D 00	0.1000D 01	0.2977D–06	0.8750D 00	0.9504	0.2500D–03	0.9890D 00	0.6192D–09	0.2446	0.3541
0.9999D 00	0.8937D 00	0.1000D 01	0.4832D–06	0.9856D 00	0.9508	0.3604D–03	0.9893D 00	0.1437D–08	0.2467	0.3544
0.9998D 00	0.8832D 00	0.1000D 01	0.7498D–06	0.1099D 01	0.9510	0.5018D–03	0.9901D 00	0.3090D–08	0.2481	0.3546
0.9998D 00	0.8729D 00	0.1000D 01	0.1122D–05	0.1214D 01	0.9511	0.6793D–03	0.9911D 00	0.6242D–08	0.2489	0.3546
0.9997D 00	0.8625D 00	0.1000D 01	0.1628D–05	0.1333D 01	0.9512	0.8985D–03	0.9918D 00	0.1197D–07	0.2494	0.3547
0.9996D 00	0.8523D 00	0.1000D 01	0.2303D–05	0.1453D 01	0.9512	0.1166D–02	0.9922D 00	0.2195D–07	0.2497	0.3547
0.9994D 00	0.8421D 00	0.1000D 01	0.3187D–05	0.1576D 01	0.9512	0.1488D–02	0.9920D 00	0.3876D–07	0.2498	0.3547
0.9993D 00	0.8319D 00	0.1000D 01	0.4328D–05	0.1701D 01	0.9512	0.1872D–02	0.9910D 00	0.6620D–07	0.2496	0.3547
0.9991D 00	0.8218D 00	0.1000D 01	0.5782D–05	0.1828D 01	0.9513	0.2326D–02	0.9893D 00	0.1099D–06	0.2494	0.3547
0.9988D 00	0.8118D 00	0.1000D 01	0.7614D–05	0.1958D 01	0.9513	0.2860D–02	0.9866D 00	0.1777D–06	0.2490	0.3548
0.9985D 00	0.8018D 00	0.1000D 01	0.9897D–05	0.2090D 01	0.9514	0.3483D–02	0.9829D 00	0.2809D–06	0.2485	0.3548
0.9982D 00	0.7918D 00	0.1000D 01	0.1272D–04	0.2224D 01	0.9515	0.4206D–02	0.9782D 00	0.4351D–06	0.2478	0.3549
0.9978D 00	0.7819D 00	0.1000D 01	0.1618D–04	0.2361D 01	0.9516	0.5041D–02	0.9723D 00	0.6617D–06	0.2470	0.3550
0.9973D 00	0.7721D 00	0.1000D 01	0.2038D–04	0.2499D 01	0.9517	0.6002D–02	0.9655D 00	0.9896D–06	0.2462	0.3551
0.9968D 00	0.7623D 00	0.1000D 01	0.2547D–04	0.2640D 01	0.9519	0.7101D–02	0.9575D 00	0.1458D–05	0.2452	0.3552
0.9962D 00	0.7526D 00	0.1000D 01	0.3159D–04	0.2783D 01	0.9521	0.8356D–02	0.9486D 00	0.2117D–05	0.2442	0.3554
0.9955D 00	0.7430D 00	0.1000D 01	0.3889D–04	0.2928D 01	0.9524	0.9783D–02	0.9388D 00	0.3036D–05	0.2431	0.3556
0.9947D 00	0.7334D 00	0.1000D 01	0.4759D–04	0.3074D 01	0.9527	0.1140D–01	0.9282D 00	0.4304D–05	0.2420	0.3558
0.9938D 00	0.7239D 00	0.1000D 01	0.5788D–04	0.3223D 01	0.9530	0.1323D–01	0.9169D 00	0.6034D–05	0.2409	0.3560
0.9929D 00	0.7145D 00	0.1000D 01	0.7001D–04	0.3374D 01	0.9533	0.1530D–01	0.9050D 00	0.8375D–05	0.2398	0.3562
0.9918D 00	0.7051D 00	0.1000D 01	0.8426D–04	0.3527D 01	0.9537	0.1762D–01	0.8927D 00	0.1152D–04	0.2386	0.3565
0.9905D 00	0.6959D 00	0.1000D 01	0.1009D–03	0.3682D 01	0.9541	0.2022D–01	0.8799D 00	0.1570D–04	0.2376	0.3568
0.9892D 00	0.6867D 00	0.1000D 01	0.1204D–03	0.3839D 01	0.9545	0.2314D–01	0.8670D 00	0.2123D–04	0.2365	0.3571
0.9877D 00	0.6775D 00	0.1000D 01	0.1429D–03	0.3998D 01	0.9549	0.2640D–01	0.8539D 00	0.2849D–04	0.2356	0.3574
0.9861D 00	0.6685D 00	0.1000D 01	0.1691D–03	0.4159D 01	0.9554	0.3004D–01	0.8406D 00	0.3797D–04	0.2346	0.3578
0.9843D 00	0.6595D 00	0.1000D 01	0.1994D–03	0.4322D 01	0.9559	0.3409D–01	0.8274D 00	0.5027D–04	0.2338	0.3581
0.9823D 00	0.6506D 00	0.1000D 01	0.2342D–03	0.4488D 01	0.9563	0.3859D–01	0.8143D 00	0.6614D–04	0.2330	0.3585
0.9802D 00	0.6417D 00	0.1000D 01	0.2743D–03	0.4656D 01	0.9568	0.4358D–01	0.8012D 00	0.8652D–04	0.2323	0.3588
0.9778D 00	0.6330D 00	0.1000D 01	0.3202D–03	0.4826D 01	0.9573	0.4911D–01	0.7883D 00	0.1126D–03	0.2317	0.3592
0.9500D 00	0.5684D 00	0.1000D 01	0.9602D–03	0.6216D 01	0.9608	0.1148D 00	0.6957D 00	0.7238D–03	0.2294	0.3619
0.9000D 00	0.4995D 00	0.1000D 01	0.2920D–02	0.8026D 01	0.9642	0.2712D 00	0.6071D 00	0.4756D–02	0.2311	0.3364
0.8500D 00	0.4558D 00	0.1000D 01	0.5753D–02	0.9399D 01	0.9658	0.4571D 00	0.5566D 00	0.1509D–01	0.2350	0.6596

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇f
0.8000D 00	0.4228D 00	0.1000D 01	0.9462D–02	0.1058D 02	0.9667	0.6687D 00	0.5213D 00	0.3554D–01	0.2399	0.3667
0.7500D 00	0.3958D 00	0.1000D 01	0.1407D–01	0.1165D 02	0.9670	0.9035D 00	0.4943D 00	0.7142D–01	0.2455	0.3670
0.7000D 00	0.3724D 00	0.1000D 01	0.1962D–01	0.1265D 02	0.9671	0.1160D 01	0.4725D 00	0.1313D 00	0.2519	0.3670
0.6500D 00	0.3516D 00	0.1000D 01	0.2617D–01	0.1361D 02	0.9669	0.1437D 01	0.4541D 00	0.2319D 00	0.2592	0.3669
0.6000D 00	0.3325D 00	0.1000D 01	0.3376D–01	0.1456D 02	0.9665	0.1733D 01	0.4384D 00	0.4113D 00	0.2674	0.3665
0.5500D 00	0.3146D 00	0.9999D 00	0.4248D–01	0.1550D 02	0.9658	0.2047D 01	0.4246D 00	0.7637D 00	0.2769	0.3659
0.5000D 00	0.2976D 00	0.9999D 00	0.5242D–01	0.1644D 02	0.9648	0.2378D 01	0.4123D 00	0.1530D 01	0.2878	0.3652
0.4500D 00	0.2810D 00	0.9998D 00	0.6369D–01	0.1741D 02	0.9636	0.2725D 01	0.4012D 00	0.3335D 01	0.3007	0.3642
0.4000D 00	0.2647D 00	0.9996D 00	0.7642D–01	0.1842D 02	0.9620	0.3087D 01	0.3911D 00	0.7832D 01	0.3160	0.3629

Model No 16.2

Table 6.

INTEGRATION OUTWARDS

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.1050D–06	0.1505D–02	0.1517D–06	0.2291D 00	0.3277D 02	0.8730	0.4719D 01	0.3301D 00	0.9783D 05	0.1206	0.3135
0.1150D–06	0.1552D–02	0.4552D–06	0.2291D 00	0.3277D 02	0.8730	0.4719D 01	0.3301D 00	0.9783D 05	0.3302	0.3135
0.1350D–06	0.1637D–02	0.1062D–05	0.2291D 00	0.3277D 02	0.8730	0.4719D 01	0.3301D 00	0.9782D 05	0.6563	0.3135
0.1750D–06	0.1785D–02	0.2276D–05	0.2291D 00	0.3277D 02	0.8730	0.4719D 01	0.3301D 00	0.9782D 05	1.0849	0.3135
0.2550D–06	0.2024D–02	0.4704D–05	0.2291D 00	0.3277D 02	0.8731	0.4719D 01	0.3301D 00	0.9781D 05	1.5387	0.3135
0.4150D–06	0.2380D–02	0.9558D–05	0.2291D 00	0.3277D 02	0.8731	0.4719D 01	0.3301D 00	0.9779D 05	1.9213	0.3135
0.7350D–06	0.2880D–02	0.1926D–04	0.2291D 00	0.3277D 02	0.8731	0.4719D 01	0.3301D 00	0.9777D 05	2.1865	0.3135
0.1375D–05	0.3549D–02	0.3867D–04	0.2291D 00	0.3277D 02	0.8731	0.4719D 01	0.3301D 00	0.9772D 05	2.3462	0.3135
0.2655D–05	0.4419D–02	0.7746D–04	0.2290D 00	0.3277D 02	0.8731	0.4718D 01	0.3301D 00	0.9765D 05	2.4340	0.3135
0.5215D–05	0.5534D–02	0.1550D–03	0.2290D 00	0.3277D 02	0.8731	0.4718D 01	0.3301D 00	0.9754D 05	2.4792	0.3135
0.1033D–04	0.6952D–02	0.3097D–03	0.2289D 00	0.3276D 02	0.8731	0.4717D 01	0.3301D 00	0.9736D 05	2.5007	0.3135
0.2057D–04	0.8746D–02	0.6186D–03	0.2288D 00	0.3276D 02	0.8731	0.4715D 01	0.3301D 00	0.9708D 05	2.5089	0.3135
0.4105D–04	0.1101D–01	0.1234D–02	0.2286D 00	0.3275D 02	0.8731	0.4713D 01	0.3301D 00	0.9663D 05	2.5086	0.3136
0.8201D–04	0.1387D–01	0.2457D–02	0.2283D 00	0.3274D 02	0.8732	0.4709D 01	0.3301D 00	0.9592D 05	2.5015	0.3136
0.1639D–03	0.1748D–01	0.4880D–02	0.2279D 00	0.3272D 03	0.8732	0.4702D 01	0.3302D 00	0.9480D 05	2.4869	0.3136
0.3278D–03	0.2203D–01	0.9652D–02	0.2271D 00	0.3268D 02	0.8733	0.4692D 01	0.3302D 00	0.9305D 05	2.4624	0.3136
0.6555D–03	0.2777D–01	0.1897D–01	0.2259D 00	0.3263D 02	0.8735	0.4676D 01	0.3302D 00	0.9033D 05	2.4232	0.3137
0.1311D–02	0.3503D–01	0.3689D–01	0.2240D 00	0.3254D 02	0.8738	0.4651D 01	0.3303D 00	0.8616D 05	2.3621	0.3138
0.2622D–02	0.4421D–01	0.7059D–01	0.2211D 00	0.3241D 02	0.8742	0.4611D 01	0.3304D 00	0.7990D 05	2.2684	0.3140

q	r	l	P (10^{16})	T (10^6)	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.5000D–02	0.5496D–01	0.1263D 00	0.2168D 00	0.3221D 02	0.8748	0.4553D 01	0.3305D 00	0.7153D 05	2.1395	0.3142
0.1000D–01	0.6954D–01	0.2271D 00	0.2097D 00	0.3188D 02	0.8759	0.4456D 01	0.3308D 00	0.5926D 05	1.9416	0.3146
0.2000D–01	0.8823D–01	0.3847D 00	0.1988D 00	0.3134D 02	0.8776	0.4304D 01	0.3312D 00	0.4365D 05	1.6697	0.3153
0.5000D–01	0.1217D 00	0.6690D 00	0.1749D 00	0.3010D 02	0.8817	0.3962D 01	0.3323D 00	0.2106D 05	1.2055	0.3170
0.8000D–01	0.1443D 00	0.8141D 00	0.1568D 00	0.2907D 02	0.8851	0.3692D 01	0.3333D 00	0.1128D 05	0.9471	0.3184
0.1100D 00	0.1626D 00	0.8935D 00	0.1418D 00	0.2815D 02	0.8883	0.3459D 01	0.3343D 00	0.6311D 04	0.7798	0.3197
0.1400D 00	0.1783D 00	0.9384D 00	0.1287D 00	0.2729D 02	0.8913	0.3250D 01	0.3354D 00	0.3613D 04	0.6635	0.3210
0.1700D 00	0.1924D 00	0.9643D 00	0.1171D 00	0.2648D 02	0.8942	0.3058D 01	0.3366D 00	0.2092D 04	0.5789	0.3223
0.2000D 00	0.2055D 00	0.9794D 00	0.1067D 00	0.2569D 02	0.8970	0.2880D 01	0.3379D 00	0.1218D 04	0.5155	0.3236
0.2500D 00	0.2256D 00	0.9918D 00	0.9130D–01	0.2442D 02	0.9017	0.2606D 01	0.3402D 00	0.4930D 03	0.4406	0.3258
0.3000D 00	0.2443D 00	0.9968D 00	0.7798D–01	0.2320D 02	0.9064	0.2356D 01	0.3430D 00	0.1966D 03	0.3905	0.3281
0.3500D 00	0.2621D 00	0.9988D 00	0.6630D–01	0.2199D 02	0.9111	0.2124D 01	0.3463D 00	0.7642D 02	0.3565	0.3304
0.4000D 00	0.2794D 00	0.9995D 00	0.5599D–01	0.2079D 02	0.9158	0.1907D 01	0.3504D 00	0.2873D 02	0.3337	0.3329

INTEGRATION INWARDS

q	r	l	P (10^{17})	T (10^6)	β	ρ	$\varkappa$	ε	∇_r	∇_a
0.1000D 01	0.9980D 00	0.1000D 01	0.3524D–11	0.6035D–01	0.9051	0.4087D–07	0.1568D 01	0.2290D–17	0.5300	0.3274
0.1000D 01	0.9874D 00	0.1000D 01	0.1568D–09	0.1750D 00	0.8491	0.5881D–06	0.1257D 01	0.2332D–14	0.2673	0.3050
0.1000D 01	0.9742D 00	0.1000D 01	0.1443D–08	0.3003D 00	0.8579	0.3187D–05	0.9750D 00	0.1095D–12	0.2201	0.3079
0.1000D 01	0.9621D 00	0.1000D 01	0.6002D–08	0.4083D 00	0.8832	0.1004D–04	0.7844D 00	0.1179D–11	0.2155	0.3176
0.1000D 01	0.9509D 00	0.1000D 01	0.1733D–07	0.5156D 00	0.8972	0.2332D–04	0.7230D 00	0.6961D–11	0.2256	0.3237
0.1000D 01	0.9402D 00	0.1000D 01	0.4048D–07	0.6270D 00	0.9038	0.4512D–04	0.7059D 00	0.2945D 10	0.2353	0.3268
0.1000D 01	0.9297D 00	0.1000D 01	0.8231D–07	0.7426D 00	0.9068	0.7771D–04	0.7017D 00	0.9987D–10	0.2416	0.3283
0.1000D 01	0.9194D 00	0.1000D 01	0.1517D–06	0.8620D 00	0.9083	0.1236D–03	0.7014D 00	0.2884D–09	0.2453	0.3290
0.9999D 00	0.9092D 00	0.1000D 01	0.2601D–06	0.9844D 00	0.9090	0.1857D–03	0.7022D 00	0.7368D–09	0.2475	0.3293
0.9999D 00	0.8990D 00	0.1000D 01	0.4215D–06	0.1110D 01	0.9093	0.2670D–03	0.7034D 00	0.1711D–08	0.2488	0.3295
0.9998D 00	0.8889D 00	0.1000D 01	0.6529D–06	0.1238D 01	0.9094	0.3710D–03	0.7045D 00	0.3677D–08	0.2495	0.3296
0.9998D 00	0.8789D 00	0.1000D 01	0.9753D–06	0.1368D 01	0.9095	0.5013D–03	0.7054D 00	0.7418D–08	0.2500	0.3296
0.0007D 00	0.8689D 00	0.1000D 01	0.1413D–05	0.1501D 01	0.9094	0.6621D–03	0.7060D 00	0.1420D–07	0.2502	0.3296
0.9996D 00	0.8589D 00	0.1000D 01	0.1996D–05	0.1636D 01	0.9094	0.8577D–03	0.7061D 00	0.2599D–07	0.2502	0.3296
0.9994D 00	0.8490D 00	0.1000D 01	0.2758D–05	0.1774D 01	0.9094	0.1093D–02	0.7056D 00	0.4577D–07	0.2500	0.3296
0.9993D 00	0.8392D 00	0.1000D 01	0.3740D–05	0.1915D 01	0.9094	0.1374D–02	0.7044D 00	0.7799D–07	0.2497	0.3296

q	r	l	P (10^{17})	T (10^{6})	β	ρ	$\varkappa$	ε	∇r	∇a
0.9991D 00	0.8294D 00	0.1000D 01	0.4989D–05	0.2057D 01	0.9095	0.1705D–02	0.7025D 00	0.1291D–06	0.2492	0.3296
0.9988D 00	0.8196D 00	0.1000D 01	0.6559D–05	0.2202D 01	0.9096	0.2095D–02	0.6999D 00	0.2081D–06	0.2486	0.3297
0.9985D 00	0.8099D 00	0.1000D 01	0.8512D–05	0.2349D 01	0.9097	0.2549D–02	0.6965D 00	0.3281D–06	0.2479	0.3297
0.9982D 00	0.8003D 00	0.1000D 01	0.1092D–04	0.2499D 01	0.9100	0.3075D–02	0.6923D 00	0.5066D–06	0.2471	0.3299
0.9978D 00	0.7907D 00	0.1000D 01	0.1387D–04	0.2651D 01	0.9103	0.3682D–02	0.6874D 00	0.7680D–06	0.2463	0.3300
0.9973D 00	0.7812D 00	0.1000D 01	0.1745D–04	0.2804D 01	0.9106	0.4380D–02	0.6818D 00	0.1145D–05	0.2453	0.3302
0.9968D 00	0.7717D 00	0.1000D 01	0.2176D–04	0.2961D 01	0.9110	0.5178D–02	0.6756D 00	0.1681D–05	0.2443	0.3304
0.9962D 00	0.7623D 00	0.1000D 01	0.2694D–04	0.3119D 01	0.9115	0.6088D–02	0.6688D 00	0.2433D–05	0.2433	0.3306
0.9955D 00	0.7530D 00	0.1000D 01	0.3312D–04	0.3279D 01	0.9120	0.7122D–02	0.6616D 00	0.3478D–05	0.2423	0.3399
0.9947D 00	0.7437D 00	0.1000D 01	0.4044D–04	0.3441D 01	0.9126	0.8293D–02	0.6540D 00	0.4913D–05	0.2413	0.3312
0.9938D 00	0.7345D 00	0.1000D 01	0.4910D–04	0.3606D 01	0.9132	0.9615D–02	0.6461D 00	0.6866D–05	0.2403	0.3315
0.9929D 00	0.7253D 00	0.1000D 01	0.5928D–04	0.3772D 01	0.9139	0.1110D–01	0.6379D 00	0.9500D–05	0.2393	0.3319
0.9918D 00	0.7163D 00	0.1000D 01	0.7120D–04	0.3941D 01	0.9146	0.1278D–01	0.6296D 00	0.1302D–04	0.2384	0.3322
0.9905D 00	0.7073D 00	0.1000D 01	0.8512D–04	0.4112D 01	0.9153	0.1465D–01	0.6213D 00	0.1770D–04	0.2376	0.3326
0.9892D 00	0.6984D 00	0.1000D 01	0.1013D–03	0.4285D 01	0.9161	0.1674D–01	0.6129D 00	0.2386D–04	0.2368	0.3330
0.9877D 00	0.6895D 00	0.1000D 01	0.1201D–03	0.4461D 01	0.9168	0.1908D–01	0.6046D 00	0.3193D–04	0.2361	0.3334
0.9861D 00	0.6808D 00	0.1000D 01	0.1417D–03	0.4639D 01	0.9176	0.2168D–01	0.5963D 00	0.4243D–04	0.2355	0.3338
0.9843D 00	0.6721D 00	0.1000D 01	0.1667D–03	0.4820D 01	0.9184	0.2457D–01	0.5881D 00	0.5601D–04	0.2349	0.3343
0.9823D 00	0.6635D 00	0.1000D 01	0.1955D–03	0.5003D 01	0.9192	0.2777D–01	0.5801D 00	0.7349D–04	0.2344	0.3347
0.9802D 00	0.6549D 00	0.1000D 01	0.2284D–03	0.5189D 01	0.9200	0.3131D–01	0.5722D 00	0.9588D–04	0.2340	0.3351
0.9778D 00	0.6464D 00	0.1000D 01	0.2660D–03	0.5377D 01	0.9208	0.3522D–01	0.5645D 00	0.1244D–03	0.2337	0.3356
0.9500D 00	0.5838D 00	0.1000D 01	0.7830D–03	0.6919D 01	0.9262	0.8104D–01	0.5107D 00	0.7849D–03	0.2336	0.3386
0.9000D 00	0.5164D 00	0.1000D 01	0.2327D–02	0.8939D 01	0.9308	0.1873D 00	0.4612V 00	0.5057D–02	0.2376	0.3413
0.8500D 00	0.4734D 00	0.1000D 01	0.4511D–02	0.1048D 02	0.9326	0.3104D 00	0.4339D 00	0.1589D–01	0.2430	0.3424
0.8000D 00	0.4407D 00	0.1000D 01	0.7325D–02	0.1181D 02	0.9331	0.4477D 00	0.4152D 00	0.3749D–01	0.2491	0.3427
0.7500D 00	0.4137D 00	0.1000D 01	0.1078D–01	0.1301D 02	0.9329	0.5976D 00	0.4012D 00	0.7715D–01	0.2558	0.3426
0.7000D 00	0.3902D 00	0.1000D 01	0.1490D–01	0.1415D 02	0.9321	0.7587D 00	0.3900D 00	0.1516D 00	0.2632	0.3421
0.6500D 00	0.3691D 00	0.1000D 01	0.1971D–01	0.1525D 02	0.9308	0.9301D 00	0.3808D 00	0.3060D 00	0.2715	0.3413
0.6000D 00	0.3497D 00	0.1000D 01	0.2526D–01	0.1633D 02	0.9290	0.1111D 01	0.3730D 00	0.6669D 00	0.2808	0.3402
0.5500D 00	0.3313D 00	0.1000D 01	0.3158D–01	0.1741D 02	0.9267	0.1300D 01	0.3663D 00	0.1588D 01	0.2913	0.3389
0.5000D 00	0.3137D 00	0.9999D 00	0.3876D–01	0.1850D 02	0.9238	0.1496D 01	0.3604D 00	0.4040D 01	0.3033	0.3372
0.4500D 00	0.2965D 00	0.9998D 00	0.4686D–01	0.1962D 02	0.9202	0.1699D 01	0.3551D 00	0.1067D 02	0.3173	0.3353
0.4000D 00	0.2794D 00	0.9995D 00	0.5599D–01	0.2079D 02	0.9158	0.1907D 01	0.3504D 00	0.2873D 02	0.3337	0.3329