Configuration files

Below are configuration files of fort.23 and fort.22:

Fort.23:

<table>
<thead>
<tr>
<th>1</th>
<th>1</th>
<th>16</th>
<th>1</th>
<th>16</th>
<th>1</th>
<th>2650</th>
<th>2650</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.102E+00</td>
<td>3.000E-01</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.000E-02</td>
<td>5.000E-02</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.000E+00</td>
<td>3.000E-01</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.000E+00</td>
<td>1</td>
<td>0.00D+00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.26400E+01</td>
<td>-1.00000E+00</td>
<td>0.00E+00</td>
<td>-1.00E+00</td>
<td>-1.00E+00</td>
<td>0.00E+00</td>
<td>0.55E+00</td>
<td>-1.00E+00</td>
<td>0</td>
</tr>
<tr>
<td>1.00E-01</td>
<td>2.00E+10</td>
<td>1.00E+07</td>
<td>0.00E+00</td>
<td>3.00E+00</td>
<td>5.30E+00</td>
<td>1.20E+00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.30E+00</td>
<td>3.00E+02</td>
<td>1.00E+04</td>
<td>1.50E-01</td>
<td>1.00E-04</td>
<td>0.00E+00</td>
<td>1.00E+03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.00E+03</td>
<td>0.00E+00</td>
<td>0.00E+00</td>
<td>0.00E+00</td>
<td>0.00E+00</td>
<td>0.00E+00</td>
<td>0.00E+00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

First line: 3rd/2nd last nos: no more than 20000 timesteps allowed at present.

Last five lines:
- ROT KS EX : KS=1 -> P1 = Pcrit1*10**ROT;
- KS=2 -> P1 = Porb*10**ROT
- KS=3 -> choose init. Porb so final PER, ECC => init. Porb, EX

Alternative initial conditions if JMX >= 0, and if any item is non-negative:

<table>
<thead>
<tr>
<th>SM</th>
<th>DTY</th>
<th>AGE</th>
<th>PER</th>
<th>BMS</th>
<th>ECC</th>
<th>P1</th>
<th>ENC</th>
<th>JMX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lrf1</td>
<td>age</td>
<td>LCarb</td>
<td>Lrf2</td>
<td>LHe</td>
<td>rho</td>
<td>MCO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>mdot</td>
<td>dtmin</td>
<td>XHe</td>
<td>eps</td>
<td>eps'</td>
<td>vmh8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sm8</td>
<td>rest</td>
<td>of</td>
<td>line</td>
<td>not</td>
<td>yet</td>
<td>used</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conditions for termination:

Notes - Bold parameters are marking for:

Time step of the evolution : 2650
Log SM : 1.102E+00
SM – stellar mass : 1.26400E+01 (Msun)
P1 – rotation speed : 0.55E+00 (d)
Above set is for single-star evolution, including a model of dynamo-activity-driven mass loss and magnetic braking. It also includes hot, luminous wind following de Jager et al (1988), and a model of superwind with Mdot prop. to L/(env. binding energy).
Task job of the evolution process (this work)

run04

The following template identifies the numbers used in the above input file:

KH2  JCH  KTH  KK  KY  KZ - 1 line
   KX = 0: pp chain not in =m; KX = 1: pp chain in =m
   KY: max. no. of abundances used (better be 12)
   KZ = 0: use simple TF approx; = 1: use integral approx.
KCL  KION  KAM  KOP  KCC  KNUC  KCN - 1 line
KT1  KT2  KT3  KT4  KT5  KO - 1 line
KR1  KR2  EPS  DEL  DH0 - 1 line
KSX(1 - 45) - 3 lines
CT1  CT2  CT3  CDC(1 - 5) - 1 line
CT(1) ........................................ CT(10) - 1 line
CC  CN  CO  CNE  CMG  CSI  CFE  C2H  C3He  CC13 - 1 line
   CALP  CU  COV  CPV  CDR  CXB  CGR  CGF  CDF
   CRM  CTF  CBT  CEA  CMS  CMT  CMI  CMJ  CMK
   CMR  CML  CHL  CLT  CPA  CBR  CSU  CSD plus 10
   more values not yet used . . . . . .
KXT(1 - 40) - 1 line: which burning rates used - 1 line
KEN(1 - 40) - 1 line: which energy gen. rates used - 1 line
KE2  KE1  KEV  KBC  KL  JH1  JH2  JH3  JH4  JH5 - 1 line
   ID(11 - 250) - 12 lines

KT1=100 - print internal details at every 100th timestep only
KT2=2  - print these details at every 2nd meshpoint only
KT3=1,2,3  - print 1, 2 or 3 'pages' of these details
KT4=4  - print a short summary of every 4th model only
KT5=5  - print convergence details after 5 iterations at each timestep
KO   - save the structural details every KO timesteps.

Each 'page' has a selection of 15 columns, chosen from 45 variables computed
in PRINTB.F. These are:

   1 psi  2 P    3 rho  4 T    5 kappa  6 grada  7 grad
   8 gr-ga 9 m   10 H1  11 He4 12 C12  13 N14  14 O16  15 Ne20
   16 Mg24 17 Si28 18 Fe56 19 H2  20 He3  21 C13  22 O18  23 Ne22
61, 62 and 63 are homology invariants, dlog rho/dlog P, dlog r/dlog P and dlog m/dlog P; L/Edd is the ratio of local luminosity to local Eddington luminosity; w is convective velocity, l is mixing-length. The 3 lines of KSX above give the selections to be printed.