How to use and publish with the free available code CESAM2k

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Cesam2k : A code of stellar structure and evolution

- Free available : contact one of the authors (PM, BP)
  ➔ the best choice (see later)
- Updated, improved, corrected (we do our best for this)
  current stable version 3.2.12 , (experimental 3.3.7)
  CoRoT dedicated (V1.1.8) *[cf. Yveline Lebreton at Meudon]*
- Easy to use (for simplest models, see later)
- Ready to use (need only one compilation)
  ➔ All options are included in the .exe file

Cesam2k : the story in brief

- The story begins in 1987 with CESAM*[Annie,Evry, GdR131]*
- Since 2001 Cesam2k *[BP came at Nice in sept. 2000]*
- Rewritten in Fortran 90/95 *[many essential advantages]*
- (Officially) presented at Nice meeting in may 2003
  ➔ http://www.oca.eu/cesam/meeting.html
- Authors : P. Morel (emeritus) and B. Pichon
  (with collaboration of Y. Lebreton, S. Brun, L.Piau, …)
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NB : Cesam (without 2k) refers to previous versions (cesam4 or cesam5, before 2001) now obsolete (no correction, no maintenance, …).

Cesam2k : A (very) short description

- Physics : Convection [6+over- & under- shoot, 2 criterions]
  Diffusion (microscopic, turbulent, acc-rad)
  Rotation (cf. Santoro's thesis, also J.P.Marques)
  EOS [8+data] and Opacities [8+data]
  Nuclear reaction network [18…]
  Atmosphere [5+rogerXX+MarcsYY]
  also : mass loss [4], 'premixed' chemical composition [7]

- User : One configuration file (for simplest use),
  One .exe file (with all options built-in)
  stop criterion [15], output format [9], numerics [13+inf]

How to use Cesam2k (1)

- For standard users :

  Only one configuration file (.don) to edit

  Keep “robust” physics (for simple explorative models)

BUT

Take care for “advanced” physics (coherence of choices, some routines are not easy to use, …)

Example : Piau et al. (A. Ap. 506 (2009) 175) misuse an experimental version of Cesam2k which leads to erroneous conclusions about the effect of radiative accelerations

➔ a comment shall/should be published soon !!

How to use Cesam2k (2)

- For advanced users :
  Many (sub-)configuration files (e.g. numerics, chemical composition, …)
  Experimental versions available on request

- More, the (new) architecture of the code allows programmers to easily add new routines
  ➔ a collective way to improve Cesam2k and its use in the astrophysical community.

How to publish with Cesam2k (1)

For this, a charter is available (in French) 2008 October 02

➔ http://www.oca.eu/cesam/charte_CESAM.txt

The underlying idea : The authors of any paper (which use Cesam2k in significant manner) share the work with the principal authors of Cesam2k in adding their names as co-authors of the paper (as a “free remuneration” of all the previous work : many year-men). Also, for the CNRS, the first indicator is the publishing rate.

➔ Hence, Cesam2k is “de facto” a collaborative code.

*How to use and publish with the free available code **Cesam2k***

L'utilisateur de Cesam2k (TM), quelle que soit la façon dont il s'est procuré la version qu'il utilise, s'engage 'de facto' à suivre les règles suivantes. Afin d'évier tout malentendu, les éditeurs des différentes revues scientifiques seront également alertés de l'existence de cette charte

1) Il ne sera en aucun cas "propriétaire" de la version, même modifiée, chaque version du code étant donc publique. Seuls les auteurs primaires du code [PM, BP, YL] se réservent le droit de posséder et d'utiliser des versions "privées"
2) Par conséquent, avant toute publication scientifique, il en informera les auteurs primaires "Bernard.Pichon@oca.eu", "Yveline.Lebreton@univ-rennes1.fr" "Pierre.Morel@oca.eu" (chercheur émérite) en y indiquant clairement la part "dite essentielle" du travail relative à l'emploi de Cesam2k c'est-à-dire la part du travail sans lequel celui-ci n'aurait pas pu être fait s'il n'avait pas disposé de ce code. Cette information inclut obligatoirement l'envoi des sources nouvelles si besoin.
3) Les auteurs ainsi contactés lui signifieront, selon cette part essentielle du travail constaté (d'un commun accord) SOIT les noms des personnes qui devront figurer comme auteurs de la publication [cas le plus probable pour des articles dans des revues] SOIT les références et remerciements à inclure dans la publication [cas le plus probable pour des communications à des congrès, colloques] Il va de soi que vu le type de partage "collaboratif" (au seul "cout gratuit" de la présence dans la liste des auteurs de 2 ou 3 noms supplémentaires) de ce code, chaque utilisateur "régulier" aura le profit de toutes corrections d'erreur signalées et de toutes les améliorations publiques.

How to publish with Cesam2k (2)

- For minor use of Cesam2k (in the sense of the main conclusions of your work would be achieved without it), the best is to inform us. We will answered with the appropriate acknowledgement to add in your paper and we also add your publication in the list of the publications that use Cesam2k.
- For important use of Cesam2k, the authors should contact us before publication. Note that, in this case, upon the basis of co publishing, we can help you towards the best use of Cesam2k.

How to publish with Cesam2k (3)

- The special case of contributors which improve (significantly) Cesam2k (for example, adding new physics such as rotation, diffusion, models of atmospheres, …) :

The authors must be contacted at least for advices (how to implement these new routines in the framework of Cesam2k).

After that, depending on the work done, we guarantee, *owing to the charter*, that for each paper using these new routines, this new author benefits same returns as us.

➔ Remember always that Cesam2k is a collaborative code where authors are paid as co-authoring in your papers !!

How to publish with Cesam2k (4)

A very recent counter example (what do not do) :
The paper Turck-Chieze et al. Ap.J. 715 (2010) 1539 claims that it use a (new improved ???) version of Cesam2k
BUT

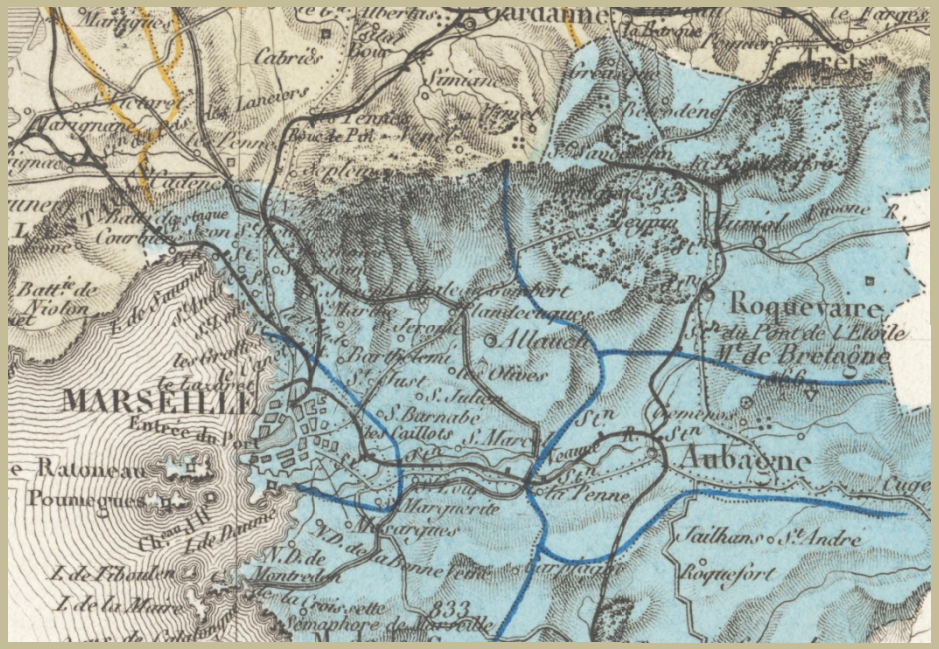
1) we are not aware of this (is it really true ?)
[no other previous paper describing the changes]

2) this paper clearly violating the Cesam2k charter
[the Cesam2k web site is quoted in this paper]

- Sorry, but note also that some sentences in this paper (quick description of Cesam2k) are wrong (the Ap. J. editor will be contacted and we are waiting for his answer).

Conclusions

- Our wish : Use Cesam2k with us !!
- Improve Cesam2k with us and …
  you will be welcome with us !!



THANK YOU MERCI

Slides available at
ftp://ftp.oca.eu/pub/pichon/SF2A/

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