

ROMANIAN REPORTS IN PHYSICS

L^AT_EX 2 _{ε} CLASS FOR AUTHORS

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This paper is supposed to act as a helpful example of how to correctly typeset your contributions before submitting them to the Romanian Reports in Physics journal.

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1. L^AT_EX COMPATIBILITY

The Romanian Reports in Physics(RRP) style was designed to allow authors, who use mainly L^AT_EX for typesetting their papers, to freely submit contributions to this journal of the Romanian Academy Publishing House. At the same time, by using this style, the authors will have much better control over the final layout of their paper and they will know how many pages their contribution will occupy when bound in the printed volume (of course only if their contribution will first be accepted and recommended by our referees for publication).

The first version of this custom made class appeared in March 2011 by inheriting the template of the Romanian Journal of Physics class for authors. Given the date, the developer made the choice as to support only L^AT_EX versions newer than L^AT_EX 2 _{ε} . The style was developed for Mik^TE_X 2.7 updated to the latest versions of its packages that were available in September 2010. Though Mik^TE_X is a distribution which is mostly centered on providing L^AT_EX support for MS Windows OS, the class was also successfully tested on a major Linux distribution that uses T_EXLive(2010). Nevertheless, the developer encourages you, the authors, to test the present class on

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as many distributions and configurations as possible and let him know whenever you find incompatibilities or errors. For this purpose, we'll mention below the list of incompatible packages as well as the list of used packages.

Due to the fact that the RRP style is a fresh document class (which tries to comply as much as possible to an existing MS Word template) and the technical support will be provided at least for some years to come, the style isn't yet included in any major $\text{\LaTeX} 2\epsilon$ distribution and it is also *modular*, meaning that its code resides in more than one file. Therefore we recommend authors to keep all the files (better the compressed archive available online) and copy them in a new directory when starting to typeset a new contribution for RRP. Of course, every now and then (in average every 3 months), you are advised to visit the RRP web site and look for newer versions of this style. In the following, we give the list of files which contain the \LaTeX code, in order of their importance:

1. **rrparticle.cls** – in this file the main code of the class resides;
2. **rrp_font.def** – this file defines some font related parameters;
3. **rrp_size11.clo** – here is the \LaTeX code for page layout;
4. **rrpstyle bst** – this file defines the bibliography style when you use a (bibtex) bibliography database (.bib);
5. **README.txt** – this file contains a very short version of this documentation (including the developer contact address) and a reference of the new and changed \LaTeX commands.

1.1. INCOMPATIBLE PACKAGES

The RRP style was designed to refuse loading specific packages either because parts of them are already incorporated into the code or because they are too obsolete and interfere with the mathematical format or character sizes. Although the list of incompatible packages is expected to change very often in time, we give here the minimal list: **authblk**, **truncate**, **mathptmx**, **caption**, **subfigure**, **hyperref**. The package **subfig** is however loaded but only in a special combination with the package **caption** and using specific options

```
\usepackage[labelseparator=none, font=footnotesize, justification=centerlast]{caption, subfig}
which it is recommended not to be changed.
```

1.2. AUTOMATICALLY LOADED PACKAGES

There are also packages which are loaded automatically by the RRP style. These packages are: **textcase**, **truncate**, **color** which are used internally, **amsfonts**,

amsmath, amssymb to allow authors to use the mathematical environments provided therein rather than the normal and limited L^AT_EX 2 _{ε} environments (especially *eqnarray* is advised to be replaced by environments from the AMS style - i.e. *split*) and **cite** to force compression of the citation lists.

As the packages mentioned above are already loaded please do not use \usepackage command to load them again. If you need special options to be passed to them use the following command for each package before the \documentclass{rrparticle} declaration:

```
\PassOptionsToPackage{list_of_options}{package_name}
```

1.3. RRP STYLE OPTIONS

The RRP article document class implements a small but growing number of options. Some of the options have the same names and mostly the same effect as the options of the standard L^AT_EX *article* class while some of them are particular to the present class. Here is a list of the currently implemented options:

- *oneside* – option (common to article class) influences slightly the page layout and headers;
- *twoside* – option (common to article class) is the default option used by the *rrparticle* class and has the same effect as its counter part in *article* class;
- *draft* – has the same effect as the option with the same name on packages like **graphicx**; besides it loads the package **showkeys** when used;
- *final* – it is active by default, having the same effect as the option with the same name on the common *article* class;
- *noadjustcites* – this option sends the *noadjust* option to the **cite** package; its purpose is to disable some issues with reference formatting when the style used in the \cite command doesn't comply to the specifications of **cite** package. Specifically if one uses \cite{ref1}-\cite{ref3} instead of \cite{ref1, ref2, ref3} some spaces would appear around the em-dash “–“ which are not aesthetic and the usage of this option removes them;
- *rrpdebug* – this option activates the debugging output specific to the insides of the class; it should **not** be used by authors unless specifically instructed by the class developer.

2. SPECIFIC COMMANDS

The present style modifies a couple of common L^AT_EX commands and implements a few new ones. The modified commands are related mostly to the layout on the first page of the document (title, authors, affiliations and abstract).

The `\title` command accepts the new line character ”\\“ in its argument but, when inserted into the document, the title is written uppercase. The same transformation is forced upon first and second level section titles (`\section` and `\subsection` commands). There is however a special command to be used whenever acronyms or words with special lowercase letters must appear in the text, namely `\NoCaseChange{}` (defined in the `textcase` package). Its effect is that the argument appears in the text unmodified by letter casing commands (also implemented by `textcase` package). For instance

```
\title{Lagrangean \NoCaseChange{sp(3)} BRST Formalism for Massive  
Vectorial Bosonic Fields}
```

will appear on the first page as

LAGRANGEAN sp(3) BRST FORMALISM FOR MASSIVE VECTORIAL
BOSONIC FIELDS.

The `\author` command is slightly different than the one implemented by the standard `article` class. Its new syntax is

```
\author[affilSign]{authorName}
```

and must be issued for each of the authors. It adds the `authorName` at the end of the list of authors for your paper (beware that the order of the authors in the list is therefore given by the order of their corresponding `\author` commands!). It also assigns the affiliation key (or list of comma separated keys) `affilSign` to the current author. The keys are recommended to be either number or lower case letters and they should be set incrementally starting with '1', respectively 'a'. In the case that all the authors have the same affiliation this key may be absent. As one may notice analyzing the source of this document, we prefer the contact information such as emails to appear in the affiliation block corresponding to the author, alphabetically indexed (whenever the affiliation is shared with other author(s)) and in italics. **Beware** that the responsibility of using the appropriate keys for author(s) and affiliation(s) belongs to the authors of the scientific material! Obvious inconsistencies will be scrutinized by the editorial personnel when encountered but the RRP editorial office will not check the validity of the provided data nor it can be held responsible if invalid affiliations are published! As one may also notice the first argument of the `\author` command can contain links to various notes regarding the status of a specific author and this information is introduced using the command

```
\authnote{noteText}
```

(see the L^AT_EX source of this document for an example – Jane Doe). No comma must appear after the last *affilSign* key and a following \authnote command.

In close relation to the author list, one must introduce the affiliation list using the command

```
\affil[affilSign]{affiliationText},
```

where *affilSign* is the specific symbol key used for (and only for) the currently entered affiliation and which must also appear next to at least one of the authors in the author list. As for the author list the affiliation list must be defined in the exact order they need to appear in the text (keeping in mind that the keys must be in low-to-high order). The affiliation key may again be missing if and only if all the authors are affiliated to the same department, institute/company and so on. The *affiliationText* may contain the end-of-line command that should be used at specific points in the text where a new line is required for aesthetic reasons(symmetry of centered lines) or clarity. We recommend however that one should not abuse of this feature in order to minimize the vertical space occupied by such informations on the first page.

Among the new commands defined by the RRP style there are

```
\keywords{comma separated key words list}
```

which **must** appear in the header of the document (before \begin{document}) or at most before \begin{abstract} is issued to have any effect at all. Moreover the list of key words should not end with a period '.' as it is automatically added by the class code.

```
\pacs{PACS number list}
```

allows one to specify PAC identifiers as a comma separated list.

There is a special environment for specifying the acknowledgments

```
\begin{acknowledgement}... \end{acknowledgement}
```

The acknowledgments are usually typeset in a font face of size 9pt so please do not use font size changing commands (they will be removed in editorial processing). Special formatting such as bold, italic or slanted are accepted and recommended as the way to emphasize any fragments of the text that you consider necessary.

3. EXAMPLES FOR VARIOUS ENVIRONMENTS

This section includes examples of different environments containing media and data material (the copyright of which is already owned by RRP) much needed in any good scientific publication. For instance below (in figure 1) we present a *figure* environment as it must appear in every contribution submitted to our journal (this picture is in PNG format so compiling must be done using *pdflatex* command rather

than the usual *latex* command or one should specify the **pdftex** driver when loading the **graphicx** package).

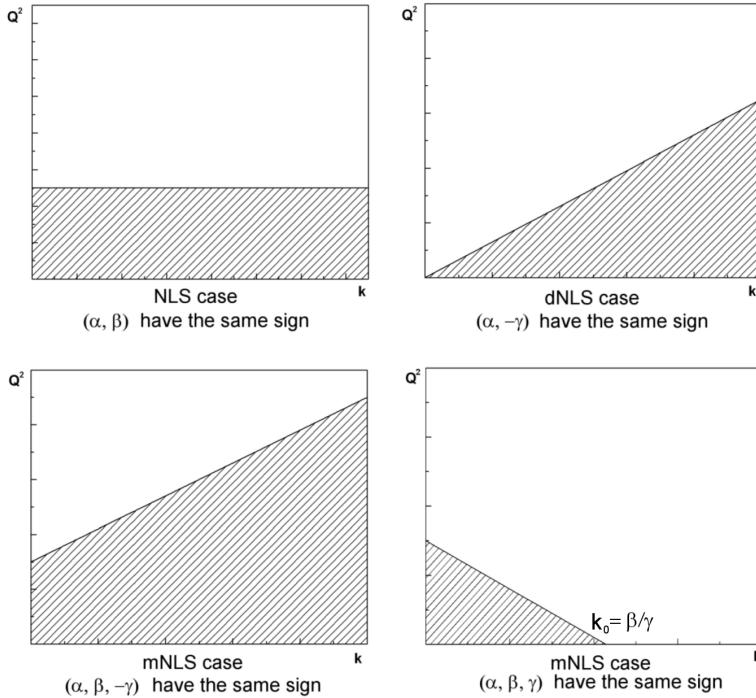


Fig. 1 – This is a sample picture taken from RRP volume **50**(1-2) from page 129 (2005). It illustrates (hashed areas) the instability domains for a series of nonlinear Schrödinger equations determined using the deterministic approach to modulational instability.

Another environment with special formatting in our style is the *table* environment, a sample of which is table 1.

Table 1.

This table is taken from RRP volume **50**(1-2) from page 43 (2005). It gives the “number of bound states dependence on the radius of space curvature for $\alpha = 0.005$, $U_0 = 1$ ”.

Value ρ	Value ε
$\rho = 50$	–
$\rho = 100$	–
$\rho = 250$	$\varepsilon_1 = 0.0289$
$\rho = 400$	$\varepsilon_1 = 0.3772$
$\rho = 1000$	$\varepsilon_1 = 0.4142, \varepsilon_2 = 0.8495$

As RRP is a physics journal, an important part of the scientific language used in the publication is constituted by equations. One of the main reason for which the developer decided to include the AMS style within the RRP style is the appropriate formatting of the mathematical environments. For instance the *split* environment is recommended as a very good replacement of the *eqnarray* environment. You can see the difference between *split* and *eqnarray* in equation (1) and (2) respectively

$$\begin{aligned} S_0[A^\mu, \dot{A}^\mu, \phi] = & \int d^4x \mathcal{L} = \int d^4x \left(-\frac{1}{4} F_{\mu\nu} F^{\mu\nu} - \right. \\ & \left. - k \partial_\lambda F^{\alpha\lambda} \partial_\rho F_\alpha^\rho + \frac{1}{2} (\partial_\mu \phi - mA_\mu)(\partial^\mu \phi - mA^\mu) \right) \end{aligned} \quad (1)$$

$$\begin{aligned} S_0[A^\mu, \dot{A}^\mu, \phi] = & \int d^4x \mathcal{L} = \int d^4x \left(-\frac{1}{4} F_{\mu\nu} F^{\mu\nu} - \right. \\ & \left. - k \partial_\lambda F^{\alpha\lambda} \partial_\rho F_\alpha^\rho + \frac{1}{2} (\partial_\mu \phi - mA_\mu)(\partial^\mu \phi - mA^\mu) \right) \end{aligned} \quad (2)$$

The AMS style also allows one to easily make use of subequations

$$\frac{\ddot{a}_2}{a_2} + \frac{\ddot{a}_3}{a_3} + \frac{\dot{a}_2}{a_2} \frac{\dot{a}_3}{a_3} - \frac{n^2}{a_3^2} = \kappa T_1^1, \quad (3a)$$

$$\frac{\ddot{a}_3}{a_3} + \frac{\ddot{a}_1}{a_1} + \frac{\dot{a}_3}{a_3} \frac{\dot{a}_1}{a_1} - \frac{m^2}{a_3^2} = \kappa T_2^2, \quad (3b)$$

$$\frac{\ddot{a}_1}{a_1} + \frac{\ddot{a}_2}{a_2} + \frac{\dot{a}_1}{a_1} \frac{\dot{a}_2}{a_2} + \frac{mn}{a_3^2} = \kappa T_3^3, \quad (3c)$$

$$\frac{\dot{a}_1}{a_1} \frac{\dot{a}_2}{a_2} + \frac{\dot{a}_2}{a_2} \frac{\dot{a}_3}{a_3} + \frac{\dot{a}_3}{a_3} \frac{\dot{a}_1}{a_1} - \frac{m^2 - mn + n^2}{a_3^2} = \kappa T_0^0, \quad (3d)$$

$$m \frac{\dot{a}_1}{a_1} - n \frac{\dot{a}_2}{a_2} - (m-n) \frac{\dot{a}_3}{a_3} = \kappa T_3^0. \quad (3e)$$

though one should consult the AMS user guide [23] when special features like splitting subequations between subsequent pages are needed (see [23] ver. 2.0, revised 2002, p. 9-10). Please notice that the *subequations* environment presents the advantage of referencing both the whole group of equations (3) or each of the sub-equations individually, *e. g.* (3c). Of course, there are other mathematical AMS environments that the author may use in their papers and to learn about them one should consult the afore-mentioned user guide.

4. INSTEAD OF CONCLUSIONS

The current style provides a few elements of both authenticity for us (the headers and footers) as well as a way for you, the author, to certify (to third parties) the

submission of a manuscript to our journal. Most of the formatting is done automatically in the background so you **must not** interfere with elements such as page layout parameters, spacing parameters used in various environments or font sizes. We admit however that in certain conditions (especially when lots of floating environments (figures and tables) are used) the author may need to issue special commands to force the output of floats on specific pages (such commands are `\clearpage`, `\newpage`, etc.). Of course these commands are allowed in your \LaTeX code. We also recommend that you do a spelling before submitting your article and use the `\hyphenation` command (or hyphenation marks) whenever necessary.

These recommendations should be taken into account together with the instructions for authors available for consulting on the Romanian Reports in Physics web site when submitting articles written in \LaTeX to our journal. Please, be advised that failure to comply may lead to indefinite delays in the publication of your submitted article even if the referees gave you a positive recommendation!

The current style (Dec. 2010) is however not a very well tested version, therefore comments and contributions to the development of the code as well as help in debugging specific issues is and will always be highly regarded by our editorial team!

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REFERENCES

1. D. E. Knuth, D. R. Bibby, “*The $\text{\TeX}book$* ” 20th edn. (AMS & Addison-Wesley Publ. Co., 1991)
2. D. E. Knuth homepage: <http://www-cs-faculty.stanford.edu/~knuth/>
3. V. Eijkhout, “ *\TeX by Topic, A $\text{\TeX}nician's Reference$* ” (electronic ver. 1.0, 2001)
4. “ *$\text{\TeX}Cookbook$* ” (MathPro Press, 1989; <http://www.mathpro.com/math/MathPro.html>)
5. D. Bausum, “ *\TeX : Reference and Examples*” (<http://www.tug.org/utilities/plain/cseq.html>)
6. P. W. Abrahams, K. A. Hargreaves, K. Berry, “ *$\text{\TeX}for the Impatient$* ” (Addison-Wesley Publ. Co., 2003)
7. *$\text{\TeX}Users Group}$* : <http://www.tug.org/tutorials/>
8. L. Lamport, “ *$\text{\LaTeX}. A Document Preparation System$* ” 2nd edn. (Addison-Wesley Publ. Co., 1994)
9. F. Mittelbach, M. Goossens (J. Braams, D. Carlisle, C. Rowley), “*The $\text{\LaTeX}Companion$* ” 2nd edn. (Addison-Wesley, Boston, 2004)

10. The L^AT_EX3 Project, “*L^AT_EX 2 ε for Class and Package Writers*” (1999)
11. T. Oetiker, H. Partl, I. Hyna, E. Schlegl, “*The Not So Short Introduction to L^AT_EX 2 ε* ” (ver. 4.31, June 24, 2010)
12. The L^AT_EX3 Project, “*L^AT_EX 2 ε for Authors*” (2001)
13. P. van Oostrum, “*Page Layout in L^AT_EX*” (<http://www.cs.ruu.nl/people/piet>)
14. A. J. Hildebrand, <http://www.math.uiuc.edu/~hildebr/tex/>
15. <http://zoonek.free.fr/LaTeX/>
16. <http://amath.colorado.edu/documentation/LaTeX>
17. <http://www-h.eng.cam.ac.uk/help/tpl/textprocessing/>
18. <http://latex.computersci.org/>
19. S. Kottwitz, <http://texblog.net/>
20. <http://www.personal.ceu.hu/tex/>
21. The UK TeXArchive: <http://www.tex.ac.uk/>
22. Stack Overflow: <http://stackoverflow.com/tags>
23. User’s Guide for the *amsmath* Package: <ftp://ftp.ams.org/pub/tex/doc/amsmath/amsldoc.pdf>