AGUPAPER — LaTeX2$_\varepsilon$ package for AGU journals. Part 1. Getting started.

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Abstract. This document is the first one of the three-part manual describing new LaTeX2$_\varepsilon$ package for preparation of papers submitted to AGU journals. It contains general description of commands included into the package and instructions how to use them. The Part 1 is addressed mainly to authors who are preparing their papers for AGU journals.

1 Introduction

The AGUPAPER package is developed under the AGU's LaTeX2$_\varepsilon$ project and aimed to meet requirements as they are formulated in the *AGU Journal Style Specifications* [July 16, 1999].

The current version 1.2 of September 2001 is the beta version and needs in thorough testing. Bug reports should be sent to author (*vitaly@wdcb.ru*) or to AGU staff.

The manual is being prepared in three parts:

Part 1. Getting Started - brief general description for users.

Part 2. More Details - for advanced users (AGU staff) where known methods, how to solve or avoid possible problems with page composing, will be demonstrated and explained in details.

Part 3. Notes for Experts - description of the template and used methods and tricks for class and package writers.

NOTE: This manual is not a replacement for LaTeX2$_\varepsilon$ manuals! It explains only how to prepare a paper for translation with AGUPAPER package and some of new command to compose LaTeXed paper. For more details related to LaTeX2$_\varepsilon$ in general please address to *Lamport* [1994], *Goossens et al.*, [1993], etc.

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2 General

2.1 Main Features

The AGUPAPER package is developed to provide maximum compatibility with papers prepared under old AGU templates. Many complicated problems, like composing front pages, generating page info blocks, switching number of columns on a page, inserting commas into long page numbers, etc., were solved 'behind the scene' and will be explained in more details in the Part 3 of this manual. The package currently includes specifications for 16 journals and can be easily expanded for more. This manual is prepared also under AGUPAPER package using basic specifications, as they are defined in the *AGU Journal Style Specifications* [July 16, 1999], except `\normalsize` command which is redefined in the preamble.

2.2 Package components

The basic version of the package (file `agupaper.sty`) includes most common components and can be run under the both, MSDOS-based version (emTeX), which is the classic version of LaTeX2$_\varepsilon$, and Windows-based version (MIKTeX). All necessary packages are called from inside `agupaper.sty`. These are `ifthen`, `calc`, `multicol`, `makeidx`, and `graphicx` packages which are included in all standard LaTeX2$_\varepsilon$ distributions.

2.3 Package options

There are three options defined for `agupaper.sty` package, i.e. `pdf`, `silent`, and `rus`.

Setting `\usepackage[pdf]{agupaper}` reconfigures `\setimage` macro changing specifications from `.eps` images (default) to `.png` images, which are necessary for correct translation of `.tex` files to `.pdf` documents.

Setting `\usepackage[silent]{agupaper}` supresses stops of translation when AGUPAPER error messages occur. With this option error and warning messages are recorded in the `.log` file.

Setting `\usepackage[rus]{agupaper}` configures template for translation of Russian texts.

Using two and more options simultaneously is possible, i.e.
`\usepackage[pdf,silent]{agupaper}` or
`\usepackage[silent,rus]{agupaper}`, etc.

2.4 Environment

The package was developed and tested in the following environment:

- Computer – IBM PC compatible,
- Operating systems – Windows 95/98/NT,
- TEX packages – emTEX, MIKTEX v.1.11 and v.1.20

3 Paper Structure

A paper prepared for translation must have the following structure:

```
\documentclass[twoside]{article}
\usepackage{agupaper}
<preamble_text>
\begin{document}
<title/author/affiliation_block>
\abstract{<text_of_abstract>}
<text_of_paper>
<references>
<ancillary_information>
<dates>
```

3.1 Preamble

The preamble contains the following data:

```
\journalid{<journal_code>}{<volume>}{<number>}
          {<date_of_issue>}
\cpright{<copyright_owner>}{<copyright_year>}
\paperid{<unique_number_used_in_CCC_code>}
        {<number_of_first_page>}
\papercode{<full_unique_code_of_paper>}
\lefthead{<running_head_(author_name(s))>}
\righthead{<running_head_(short_title)>}
\received{<date_of_receiving>}
\revised{<date_of_revision>}
\accepted{<date_of_acceptance>}
\online{<date_of_loading_paper_online>}{<URL>}
\popref{<date_of_print_companion>}
```

The following information on author addresses is optional and depends on a particular journal specifications. If required put here one or more author addresses as shown. After translation they will appear at the end of paper. Both forms `\authoraddr` and `\authoraddress` are valid.

```
\authoraddr{A. B. First, Institute of
Irreproducible Physics, 13 Invisible Str.,
Shambala 000000, Wonderland}
```

3.2 Document Body

```
\begin{document}
```

3.2.1 Title/Author/Affiliation Block

```
\title{<title_of_paper}

\author{<name_of_1st_author(s)>}
\affil{<1st_author(s)'_affiliation>}
```

and more author/affiliation groups if appropriate. In case of more than three groups the package issues a warning.

For alternative affiliations of authors two commands `\altaffilmark{<number>}` and `\altaffiltext{<number>}{<text>}` may be used like in the following sample:

```
\author{First B. Author\altaffilmark{1}}
\affil{<1st_author(s)'_affiliation>}
\altaffiltext{1}{<Alternative affiliation
                 of the 1st author>}
```

These commands are saved in the same syntax as in the old AGU templates. The summary of all `\altaffiltext` commands will appear after translation as a footnote in the first column of the front page.

3.2.2 Abstract

```
\abstract{<text_of_abstract>}
```

NOTE: This form of abstract mark-up differs from old one. In the old AGU style files abstract text was surrounded by `\begin{abstract}` and `\end{abstract}` commands. This modification reflects some principal solutions which are basic for the new template.

`\abstract{<text_of_abstract>}` is the necessary component of any paper translated under AGUPAPER template. In case when a paper has no abstract at least `\abstract{}` must appear in the paper text prepared for translation. The reasons for mentioned solutions will be explained in details in the Part 2 of this manual.

3.2.3 Text of Paper

```
<text_of_paper>
```

The marked-up text of paper must be put here. Any standard LaTeX2$_\varepsilon$ commands can be used in mark-up process. It is not recommended to use user-designed LaTeX2$_\varepsilon$ definitions until this is agreed with AGU manager. Usage of extra packages included into standard LaTeX2$_\varepsilon$ distribution is possible. They must be added in the preamble using `\usepackage{<package>}` after `\usepackage{agupaper}` string.

3.3 References

The old AGU template specifications, as they seen by the typesetter, are saved. They look like:

```
\begin{references}
\reference <text_of_reference>
\reference <text_of_reference>
... and more
\end{references}
```

`\references` environment send to output not only references but also accumulated information on author addresses and dates of receiving, revising, and accepting paper. `\noreferences` command must be inserted instead of the reference block in case when a paper has no references.

```
<text_of_paper>
\noreferences
\end{document}
```

4 Configuring Styles

4.1 Journal Codes

The codes are defined in the template for the following AGU journals:

Code	Journal title
JGRA	Journal of Geophysical Research – – Space Physics (A)
JGRB	Journal of Geophysical Research – – Solid Earth (B)
JGRC	Journal of Geophysical Research – – Oceans (C)
JGRD	Journal of Geophysical Research – – Atmospheres (D)
JGRE	Journal of Geophysical Research – – Planets (E)
GRL	Geophysical Research Letters
PAL	Paleoceanography
RAS	Radio Science
TEC	Tectonics
GBC	Global Biochemical Cycles
GGG	Geochemistry, Geophysics, Geosystems
EIN	Earth Interactions
ROG	Reviews of Geophysics
WRR	Water Research Resources
IJGA	International Journal of Geomagnetism and Aeronomy
RJES	Russian Journal of Earth Sciences
AGUMS	AGU Manuscripts

The values of style parameters (fonts, composition of front page and references, identation and vertical space values, etc.) were defined in *LaTeX2$_\varepsilon$ templates proposal* [1998]. For journals which were not included in this document basic style was used.

Most important differences in style parameters are:
- two-column- and one-column-wide abstracts,
- only electronic, only printed, and mixed journals,
- journals with three-column references,
- manuscript style.

Most specific is the *Reviews of Geophysics* with the front page out of typical AGU style.

Depending on journal code AGUPAPER package configures itself to produce output according to journal specifications.

The manuscript style can be initiated as follows:

1. By setting the `\journalid` macro as `\journalid {AGUMS}{}{}{}`. In this case remaining parameters (second to fourth) are ignored and the identification line is composed as

AGU MANUSCRIPTS

2. By setting the `\journalid` macro as `\journalid {RAS}{}{}{}`. In this case remaining parameters *must*

be empty and the identification line is composed as

AGU MANUSCRIPTS
To appear in the *Radio Science*, 2000

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where the year (2000 in this sample) is extracted from the copyright line (see below).

It is possible also to use this template for journal titles not listed in the table. For example, this manual is produced with `\journalid` line set as follows

```
\journalid{AGUPAPER MANUAL}{}{}{January 2000}
```

4.2 Preamble Command Values

4.2.1 Copyright

```
\cpright{<copyright_owner>}{<copyright_year>}
```

The list of possible parameters for `<copyright_owner>` field corresponds to that which is currently used in old templates, i.e. `AGU`, `PD`, `Crown`, `none`.

4.2.2 Paper Identifiers

```
\paperid{<unique_number_used_in_CCC_code>}
        {<number_of_first_page>}
\papercode{<full_unique_code_of_paper>}
```

`<unique_number_used_in_CCC_code>` is the right part of second group in CCC code, i.e. the current number of the paper in the issue.

`<number_of_first_page>` is the number of front page of the paper. During the initial translation by author it can be set to 1. Real numbers can be inserted during final translation for producing camera-ready copy(CRC).

`<full_unique_code_of_paper>` is the fully composed code of paper, for example, `GAI99306`, `1999RG900009`, `1999JB900195`, etc., which appears in the paper info block at the bottom of front page.

4.2.3 Running Head

```
\lefthead{<running_head_author_name(s)>}
\righthead{<running_head_short_title>}
```

These commands are used in the same way as in old AGU style files. Author name(s) and short title must be set in the lowercase, and must not exceed 13.5 cm. The template generates warning if total length of `\lefthead` and `\righthead` contents exceeds this value.

4.2.4 Dates

```
\received{<date_of_receiving>}
\revised{<date_of_revision>}
\accepted{<date_of_acceptance>}
```

These commands are also used in the same way as in old AGU style files.

If `\revised` and/or `\accepted` commands are commented or contain empty parameters corresponding fragment(s) do not appear in the `dates` line.

If `\received` command is commented or contains empty parameter the `dates` line does not appear.

4.2.5 Online versions

```
\online{<date_of_loading_paper_online>}{<URL>}
\popref{<date_of_print_companion>}
```

These are quite new commands containing information on electronic versions of papers. If the command `\online` presents and both parameters are not empty the following lines are produced in the paper info block

The online version of this paper was published August 5, 1999
URL: http://eos.wdcb.ru/ijga/gai99306/gai99306.htm

assuming that `\online` command looks like:

```
\online{August 5, 1999}
{http://eos.wdcb.ru/ijga/gai99306/gai99306.htm}
```

If the first parameter is empty, i.e.

```
\online{}
{http://eos.wdcb.ru/ijga/gai99306/gai99306.htm}
```

template substitute the current date instead, i.e. the date of last translation produced by LaTeX2$_\varepsilon$ command `\today`. When the second parameter is empty, i.e.

```
\online{August 5, 1999}{}
```

template substitute the URL which is generated using the rule defined in the template for any particular journal. In case of IJGA, for example, it uses URL prefix (`http://eos.wdcb.ru/ijga/`) and paper code (`gai99306`) to compose URL line.

NOTE: At the moment for most journals these rules are not defined.

In case of both empty parameters no online information is produced.

`\popref{<date_of_print_companion>}` command is used to provide readers with the status of printed version for those journals which have electronic version as a primary one. In this case online version appears earlier than the printed one and the `\popref{}` command

has empty parameter. Empty parameter produces the string

Print companion will be issued.

`\popref{yes}` command produces the string

Print companion issued November 1999,

where 'November 1999' is the same date used in the paper identification line (at the top of the front page).

`\popref{October 25, 1999}` command produces the string

Print companion issued October 25, 1999

This string is printed only with online date and URL information.

4.3 JGR Supplemental Abstract

The text of JGR supplemental abstract must be preceeded with `\supplement` command and put as a last fragment of the paper before `\end{document}`. The `\supplement` command inserts the paper code before the supplemental abstract text.

5 Including Floats (Figures and Tables)

The following set of commands need to be used for inserting floats (tables and figures).

```
\begin{figure}[t] % t,b,p,h,H placement options
\captionwidth{<figure_caption_width>}
\centerline{\includegraphics{m11203_p.eps}}
\caption{<text of figure caption>}
\end{figure}

\begin{table}[b]% t,b,p,h,H placement options
\captionwidth{<table_caption_width>}
\caption{<text of figure caption>}
<tabulated material>
\end{table}
```

These forms are used for one-column floats. Star forms (`figure*` and `table*`) are used for double-column floats.

For compatibility with the old AGU template `\figurewidth` and `\tablewidth` commands may be used instead of `\captionwidth`.

For details of `\includegraphics{}` command see *Goossens et al.* [1997].

The command `\setimage{`*value1*`}{`*value2*`}{`*value3*`}{`*value4*`}{`*image_file*`}` is the generalized command for image file insertion which can be convenient for translation input files to `.dvi` and `.pdf` output. Here *value1* and *value2* are initial horizontal and vertical displacements of the image within reserved space for the float, *value3* and *value4* are the horizontal and versical sizes of the image, and *image_file* is the name of the image file. It is assumed that the format of the image file will be `.eps` by default or `.png` if package option `[pdf]` was set.

The package contains also a number of commands which can help with proper setting of floats. They will be explained in more details in the Part 2 of this manual.

6 Including Multipage Tables

Multipage tables can be included using `longtable` and `supertabular` packages (see *Goossens et al.*, [1993] for more details).

Tables produced using both environments are not floats and normally start after the point in running text, where they are inserted. While `supertabular` can produce correct pagination in twocolumn mode, more sophisticated `longtable` environment is working in onecolumn mode and can normally be used for twocolumn-wide multipage tables.

The AGUPAPER package contains commands which produce only minor changes to both `longtable` and `supertabular` packages for compatibility with other float definitions.

7 Template Error and Warning Messages

The `agupaper.sty` template analyses some parameters included into the preamble and generates error messages:

```
AGUPAPER ERROR!!! Unrecognised journal code in
the 'journalid' macro! (ABCD)
Press ENTER to continue...

\@typein=
```

Unrecognised journal code is shown in parentheses. i.e. `ABCD` in this sample. Correct the journal code and run translation again.

```
AGUPAPER ERROR!!! Copyright year is not
defined.
Enter copyright year.

\cpr@year=
```

You may enter missed copyright year just in the cursor position, then press ENTER.

```
AGUPAPER ERROR!!! Number of first page is not
defined.
Enter number of first page.
```

`\paper@page=`

You may enter missed number of first page just in the cursor position, then press ENTER.

```
AGUPAPER ERROR!!! Number of paper is not
defined.
Enter number of paper.
```

`\paper@num=`

You may enter missed number of paper just in the cursor position, then press ENTER.

```
AGUPAPER ERROR!!! At least one size (width
or height) must be set for PNG image.
Press ENTER to continue...
```

`\@typein=`

This message appears when `.pdf` file is produced instead of `.dvi` file and `\setimage{}{}{}{}{}` command is used to set `.png` image as a part of float. Press ENTER, then reset width and/or height of corresponding image.

```
AGUPAPER WARNING!!! Running head is too long!
Reset 'lefthead' and 'righthead' values in the
preamble.
```

`\@typein=`

Press ENTER, then reset `\lefthead` and `\righthead` values in the preamble.

```
AGUPAPER WARNING!!!  Number of author/affili-
ation groups exceeds 3.}
```

`\@typein=`

Press ENTER, then reset author/affiliation block to make it shorter.

```
AGUPAPER WARNING!!!  Longtable not in 1-column
mode!}%
Press ENTER to continue...
```

`\@typein=`

This message normally appears when an author uses the `longtable` environment in twocolumn mode. Note, that tables composed using the `longtable` are not floats. Check if multipage tables are set correctly in twocolumn mode.

8 Some Tips in Composing Pages

8.1 Changing Number of Columns

The *Tectonics* and *Paleoceanography* journals are using three-column format for reference and ancillary information. There is no possibility to switch from twocolumn to multicolumn on the same page. The commands `\startlastpage{}{}` and `\endlastpage` were developed to avoid this problem. The first command must be inserted in the point which is defined by TEX translator for the pagebreak nearest to the page where References start. This point can be found using DVI viewer.

Values of `\startlastpage{}{}` must be set as follows. The first parameter has one of three values depending on type of breaking:

`p` - new page starts with new paragraph,
`b` - new page breaks paragraph,
`r` - new page starts after breaking reference item.

The second parameter is empty for `p` and `b` and includes remaining part of broken reference paragraph after breaking point for the value `r`.

The `\endlastpage` commands must be put just before three-column fragment.

8.2 Last Page Problem

If multicolumn environment is used for References and ancillary parts, as in case of *Tectonics* and *Paleoceanography* journals, there is no problem with making three column of the same height. The `\multicols` package supports flushed bottom columns. The problem appears for all other journals which use twocolumn environment for the whole paper. As a result some additional mark-ups are necessary.

Three solutions can be used to solve this problem.

1. To insert manually `\newpage` (if breaking point is between paragraphs), or `\linebreak\newpage\noindent` (if within text paragraph), or `\refparbreak{<remaining_part_of_reference_paragraph>}` (if within reference paragraph),

2. To use `\startlastpage{}{}` and `\endlastpage` commands described above,

3. To shorten last page using LaTeX2$_\varepsilon$ command `\enlargethispage{<vertical_value>}` with a negative `<vertical_value>`, which can be set in `\baselineskip` units.

The current page was adjusted by putting the command `\enlargethispage{-47\baselineskip}` after the current paragraph.

References

L. Lamport, *A Document Preparation System LaTeX* . Addison-Wesley, 1994, 272 pp.

M. Goossens, F. Mittelbach, A. Samarin, *The LaTeX Companion*. Addison-Wesley, 1993, 530 pp.

M. Goossens, S. Rahtz, F. Mittelbach, *The LaTeX Graphics Companion*. Addison-Wesley, 1997, 554 pp.

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