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LATEX ADDENDUM FOR BALTIC ASTRONOMY

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Abstract. There is a small addendum to the main latex2e article package to make the paper similar to the style which was used from the founding of the journal, but now the main font is 10pt instead of 12pt, which was used in previous volumes of the journal. It seems that everything is working, except the problem with the first (the title) page heading which is different from the rest pages of the paper and the special measures were taken to solve this problem.

Of course, everyone may use his own favorite features of the LATEX, but the layout of the paragraphs and fonts used must be like they are in this example, and the tables and figures must be placed as much as posible similarly as it is shown below. If somebody would like to use some other LATEX or his own packages or definitions, they must produce the same layout – gaps, font sizes, bolds, as it is shown in this example. Except that, all the above mentioned personal features must be presented together at the head of the .tex file of the paper, to make possible for the editors to see them easily.

The rest of the text gives some understanding about the Baltic Astronomy (BA) style differences comparatively to the plain latex article style and makes this paper an example to help authors to introduce to some BA layout features. In some places, before those features, short remarks in boxes in bold fonts are given explaining what and why BA likes them made like that.

Use the key words exactly as in the AJ or A&A thesaurus:

Key words: stars: AGB and post-AGB, variable: general – stars: individual (RS Cnc, ST Her, OP Her)

1. THE BALTIC STYLE SECTIONING

In the BA style some commands were slightly modified in comparison to those in the usual latex: captionb, (captionc – for centered short captions), sectionb, subsectionb, subsubsectionb, authorl, addressl. This smilarity makes easier to remeber the commands in the usual latex articles, please, do not try to correct them. The result will be a mixture of the BA and plain latex styles and this will cause a headache to the editors.

The sectionb command makes the section title in the main font capitals – but not the increased size bolds, like in the plain latex articles. The numbering of sections in our case is not automatic, the authors are supposed to include their numbers "mannually".

1.1. The Baltic style subsection

The subsectionb makes subsection title in italics, and numbering is not automatic again.*

1.1.2. The Baltic style subsubsection

The subsubsectionb command makes subsubsection title in normal text size (10pt) fonts, just adds the required spaces before and after the title. Numbering is left for the authors, like for section and subsection.

2. FIGURE FILES

Picture figures, like this picture of myself, may be included into paper after conversion of .jpg pictures into .eps format, like here, but to get good quality of the picture one has to make it in sufficiently high dpi's; as a result, .eps files become very big. I had to degrade my .jpg picture down to 200dpi to make it of acceptable size. It is much better to include .jpg pictures directly, using dvipdfm package, which is present in most recent latex distributions.

Fig. 1. A photograph of the author.

On the next page we demonstrate Figure 2, which is of quite bad design – it contains too thin lines of axes, fonts are too small and it occupies all the width of the page without necessity. Figures like this (having just one curve or a few

* Authors are supposed to do numbering themselves.

simple features inside) must be designed keeping in mind that they will be scaled down significantly and wrapped when placing them into the text.

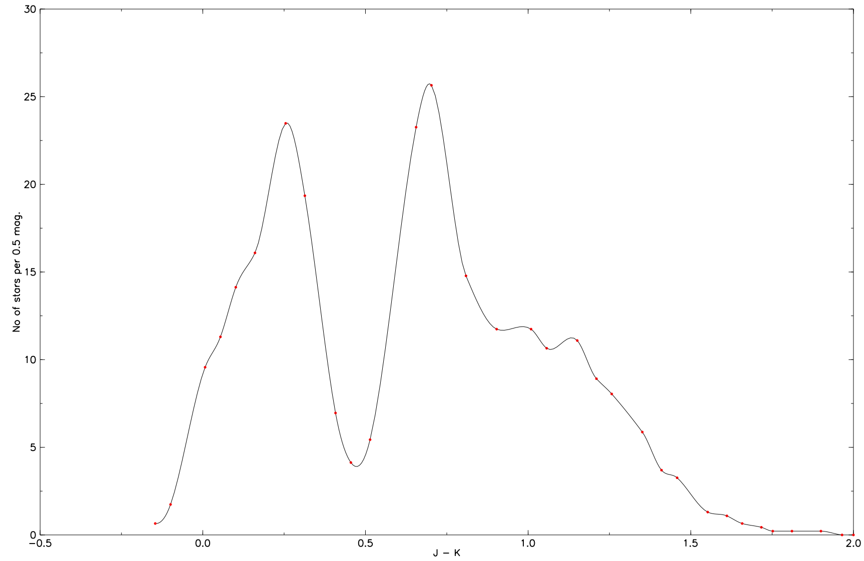

Fig. 2. Number of stars.

Wrapping saves some space for the text and does not reduce understanding the information for the reader.

Bearing in mind that Figure 2 will be included into the paper wrapped and scaled to become similar to Figure 3, one must change in Figure 2 almost everything – the thicknesses of lines, widths and lengths of the ticks on the axes, sizes and frequency of the labels on axes. If to make Figure 2 of the size of Figure 3 simply by sizing down, it will become not readable.

There are several reasons why authors present figure files not acceptable for the printing:

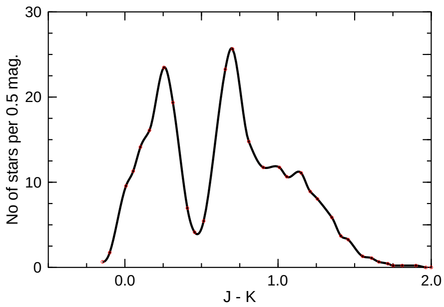

Fig. 3. Number of stars.

1. When preparing their figure files, some authors do not pay attention to the settings of the axes and fonts at all. In that case the program selects them as default, counting that the graph will be printed as A4 size. Those default settings usually give too thin/small features even if to print the picture on A4 format. It is worth to use some time to set up those options keeping in mind where that picture

file will be used – printed onto A4 sheet, projected on a big screen, or scaled down into a small area of the A4 page. It is not so much of additional job to do those adjustments for the authors, when they prepare their picture files directly from their data, and quite not easy, tedious job for the editors to change those features in the finished files – they have either to find and edit commands of those features directly in the postscript file text, or to take pictures into some drawing programs and to redraw them completely line by line;

2. Some authors do not like to waste their time making their graph files anew, when they prepare their papers for publishing after the conference. They scan their presentation paper graphs using high resolution and send us unacceptably huge non-editable bitmap files even when thy show only a few simple lines in them. The same vector graph file made directly from the data is up to 100 times smaller and gives significantly better quality outprint. BA does not accept such a scanned files;

3. Sometimes happen that authors make their graph files from the original data using good programs, but they make their .eps files not via direct export into vector format, but use some bitmap output, and then convert their bitmap files into the .eps files. The results are also unacceptable graphs with badly looking "pixelized" lines and fonts, BA does not accept such picture files too.

The BA policy is not to allow for the latex to do numbering of the sections, subsections and figures automatically – for the small papers of 4–8 pages, which usually are met in the proceedings, it is more acceptable.

The plain latex is somewhat not flexible if short papers (of 4–8 pages) contain many figures or tables. Then it places the figures often quite badly, sometimes even pushing all of them to the end of the paper after the text.

In that case, it is little sense to use the floats like begin(figure) – end(figure), begin(table) – end(table). It is better to place figures and tables "manually" including them into "vbox-es" and moving some lines of text "by hand", as it is shown in several places of our example paper.

However, when the paper, even it is short, contains a single figure or table, it is quite acceptable to use the floating forms – latex produces good layout in that case.

On the next page we give paragraph from one of previous BA papers just to demonstrate how equations look like in the BA style. It is acceptable to include equations like here – beginequation – endequation, but we prefer, that the inclusion of the equations (especially if there are only a few equations in a small paper) would be done as displayed math using eqno(#), to make .tex files easier for editing.

3. THE MATHEMATICAL POINT OF VIEW

Let us call $y(t)$ the star signal, that is the time series due to the eigenmodes:

$$y(t) = \sum_{j=1}^{n} A_j \sin(2\pi\nu_j t + \phi_j). \tag{1}$$

and $\hat{y}(\nu)$ its FT. We recall that the observational window is a sum of "door-functions" translated on the time axis. A door-function whose width is l and is centered on $t = 0$ is defined as:

$$\Pi_l(t) = \begin{cases} 1 & \text{if } \frac{-l}{2} \le t \le \frac{l}{2} \\ 0 & \text{otherwise} \end{cases} . \tag{2}$$

The $|FT|^2$ associated to such a door-function is:

$$|\hat{\Pi}_l|^2 = \frac{\sin^2(\pi\nu l)}{(\pi\nu)^2} \tag{3}$$

The observational window is:

$$w(t) = \sum_{j=1}^{n} \Pi_{l_j}(t - t_j) . \tag{4}$$

The signal we are observing is *supposed* to be:

$$s(t) = y(t) \cdot w(t) . \tag{5}$$

3. TABLES

Tables should be centered on the page. The caption is placed as multicolumn and its width is fixed by the parbox preambule. "Table No." is in bold. In the body of the table authors may use features of their own design, but they must not change the BA design of table too much.

Table 1. Second order extinction coefficients γ and g for WET R647 and WET TCP bands in Molėtai Observatory, when $h = 220$ m, $T = 3$ mm, $A_{\rm s}$=0.2 and $b_{\rm s}$=0.8.

α	γ	g(O V)	g (M0 III)
$\alpha_{\rm R647}, (U-B)_0$	–0.2680	–0.5565	–0.0772
$\alpha_{\rm R647}, (U-V)_0$	–0.1526	–0.2405	–0.0415
$\alpha_{\rm R647}, (B-V)_0$	–0.3352	–0.4236	–0.0896
$\alpha_{\rm TCP}, (U-B)_0$	–0.1495	–0.3410	–0.0583
$\alpha_{\rm TCP}, (U-V)_0$	–0.0878	–0.1469	–0.0313
$\alpha_{\rm TCP}, (B-V)_0$	–0.2006	–0.2582	–0.0676

Small and not too complicated tables may be included wrapped with the text – like small figures.

Table 2. Example from the TEXbook, modified.

Year	World population
8000 B.C.	5 000 000
50 A.D.	200 000 000
1650 A.D.	500 000 000
1945 A.D.	2 300 000 000
1980 A.D.	4 400 000 000
2003 A.D.	6 000 000 000

If tables do not fit into the BA page width (12.5 mm) they may be designed using smaller fonts, but it is better to make table files separately, convert them to .eps files and include into the required page places like figures, using any scaling. Some long tables may be placed along the page (using the landscape orientation): in this case the table caption must be given in the same landscape orientation, not on the top of the page. A good way for placing tables is to use the dvipdfm package, which has tools for rotation of the entire paragraphs with all features in them.

The table below was made separately, using its own style, then converted to .eps, and included here as an ordinary picture.

Table 3. The projects for which the series of plates were exposed.

Projects	Telescope	Scale $''/\mathrm{mm}^{-1}$	Period of observations	Limiting magnitude	Numb. of plates
Sky areas with	DLA	38	1950–1986	13.6–16.0	1100
galaxies	DWA	103	1976–1986	to 16.0	300
	DSA	295	1987–1990	12.0–13.0	100
Sky areas with:	DAZ	69	1986–1988	to 18.0	20
radio sources	Zeiss-600	28	1986–1989	to 18.5	100
Selected sky areas	DWA	103	1976–1984	to 16.0	400
(SPO, Aql, Cyg, Cas,	DSA	295	1949–1990	to 14.0	2080
Her, Tau, Leo, Ori)	TCA	172	1955–1961	to 12.8	840
Fundamental	DLA	38	1956–1985	14.0–14.5	1770
stars	DWA	103	1985–1990	to 15.5	150

Acknowledgments in BA should be given in the following form, not as a separate section.

ACKNOWLEDGMENTS. Special thanks are to John Brown and Fred White for their help.

Our special request is for right references. Many authors pay little attention to the reference list style, which is required in BA, sometimes they even copy old reference lists from their archives and present us unacceptably different layout punctuation and abbreviations.

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APPENDIX 1. SOME SPECIAL DEFINITIONS, WHICH ARE INCLUDED INTO baltlat5.sty FILE

\ac \Ac \uc \Uc $\Longrightarrow$ ą Ą ų Ų							
\sun	\sq	\degr	\dgr	\arcmin	\arcsec		
$\odot$	$\square$	$^{\circ}$	$^{\circ}$	$^{\prime}$	$^{\prime\prime}$		
e.g. 30\degr15\arcmin25\arcsec $\Longrightarrow$ $30^{\circ}15^{\prime}25^{\prime\prime}$							
\fd	\fh	\fm	\fs	\fdg	\farcm	\farcs	\fp
$^{\rm d}_{\cdot}$	$^{\rm h}_{\cdot}$	$^{\rm m}_{\cdot}$	$^{\rm s}_{\cdot}$	$^{\circ}_{\cdot}$	$^{\prime}_{\cdot}$	$^{\prime\prime}_{\cdot}$	$^{\rm p}_{\cdot}$
e.g. 30\fd56 $\Longrightarrow$ $30\overset{\rm d}{.}56$				30\fh56 $\Longrightarrow$ $30\overset{\rm h}{.}56$			
\oc	\gmode	\pmode	\gmodes	\pmodes	\etal	\msun	
$O-C$	g-mode	p-mode	g-modes	p-modes	et al.	$M_{\odot}$	
\rsun	\lsun	\te	\Te	\mstr	\rstr	\lstr	\angstr
$R_{\odot}$	$L_{\odot}$	$T_{\rm e}$	$T_{\rm e}$	$M_{\star}$	$R_{\star}$	$L_{\star}$	Å
\Pdot	\Tdot	\Rdot	\Tmax	\mitstar	\mh	\mhe	
$\dot{P}$	$\dot{T}$	$\dot{R}$	$T_{\rm max}$	$M_{\bigstar}$	$\rm M_H$	$\rm M_{He}$	