

L^AT_EX package eqnalign

— — making eqnarray(*) look and work like align(*) — —

by Tom Hejda, tohecz@gmail.com

1 The goal

The goal of this package is to allow easy conversion from the insanely-looking eqnarray to the look and behaviour of align from amsmath. It is inspired by a T_EX.StackExchange question <http://tex.stackexchange.com/q/96210/11002> by a user called “Werner”, and by an answer of mine to the question.

2 The behaviour

The package is activated by simply loading it, and it does not have any package options. It just redefines eqnarray and eqnarray*, and then it makes amsthm aware of this redefinition so that \qedhere works inside these environments.

3 License and remarks

- (1) The package is licensed under the L^AT_EX Project Public License version 1.3c (LPPL v1.3c) or higher. The latest version of this license is in <http://www.latex-project.org/lppl.txt>.
- (2) All bugs shall be reported to the GitHub page <http://github.com/tohecz/eqnalign>.
- (3) Note that actually, the usage of this package is discouraged, in favour of converting the code into proper “amsmath code”, using the true align and align* environments. It is intended for cases where a lot of already existing code needs to be converted and there is no capacity for doing it the right but time-consuming way.

4 Implementation

```
1 <*package>
```

Package header.

```
2 \ProvidesPackage{eqnalign}[2016/06/09 v1.0 Make eqnarray(*) behave like align(*).]
```

The only necessary package is amsmath so that align and align* are defined.

```
3 \RequirePackage{amsmath}
```

The package does some catcode mysteries that shouldn’t propagate out, so we make everything in a group and use \gdef everywhere.

```
4 \begingroup
```

`\eqna@origamp` We store a catcode-4 (tab alignment char) & in a macro. We need a catcode-13 (active) & throughout the rest of the package.

```
5 \catcode'\&=4
```

```
6 \gdef\eqna@origamp{&}
```

```
7 \catcode'\&=13
```

`\eqna@newamp` This will be the replacement of `&` inside `eqnalign`. We use `\eqna@doamp` if the innermost environment is `eqnalign` and `\eqna@origamp` otherwise; this is to allow things like arrays and matrices inside `eqnalign`.

```

8 \gdef\eqna@newamp{%
9   \ifx\@currenvir\eqna@currenvir
10    \eqna@doamp
11   \else
12    \eqna@origamp
13   \fi
14 }
```

`\eqna@amp@i` `\eqna@amp@ii` `\eqna@amp@iii` Three macros that are “rotated”, after the first, the second shall be used, then the third. The third one ends a group since it ends a table cell, therefore after that the first one is again in action. The first `&` on a line is kept, the second is ignored, the third is kept.

```

15 \gdef\eqna@amp@i{\eqna@origamp\let\eqna@doamp\eqna@amp@ii}
16 \gdef\eqna@amp@ii{\let\eqna@doamp\eqna@amp@iii}
17 \gdef\eqna@amp@iii{\eqna@origamp}
```

`\eqna@doamp` The default is `\eqna@amp@i`.

```

18 \global\let\eqna@doamp\eqna@amp@i
```

`\eqna@hook` The default meaning of `&` is `\eqna@amp@i`. We store the current environment, which is either `eqnarray` or `eqnarray*`; it is used in `\eqna@newamp` for the test for inner environments. Then we activate `&` and make its meaning `\eqna@newamp`.

```

19 \gdef\eqna@hook{%
20   \let\eqna@currenvir\@currenvir
21   \catcode'\&=\active
22   \let&\eqna@newamp
23 }
```

Now we will be defining environments containing `*` in name, so we make it a letter.

```

24 \catcode'\*=11
```

`\eqna@def@env` `eqnarray` `eqnarray*` We define a macro `\eqna@def@env` that contains the redefinitions of `eqnarray` (and `eqnarray*`). The environments themselves are just like `align`, just hooked using `\eqna@hook`. We then call this macro immediately to define the environments. (All this “double way” is to correct things in case `hyperref` is loaded later.

```

25 \gdef\eqna@def@env{%
26   \gdef\eqnarray{\eqna@hook\align}%
27   \gdef\eqnarray*{\eqna@hook\align*}%
28   \global\let\endeqnarray\endalign
29   \global\let\endeqnarray*\endalign*
30 }
31 \eqna@def@env
```

`\eqnarray@qed` `\eqnarray*@qed` To make `\qedhere` work in `eqnarray`, we need to “hint” `amsthm` that the two environments exist.

```

32 \global\let\eqnarray@qed\align@qed
33 \global\let\eqnarray*@qed\align*@qed
```

End the group we began at the very beginning.

```

34 \endgroup
```

`EQNarray` Just of sentiment, we keep the original `eqnarray` as `EQNarray`.

```

35 \def\EQNarray{%
36   \stepcounter{equation}%
37   \def\@currentlabel{\p@equation\theequation}%
38   \global\@eqnswtrue
39   \m@th
40   \global\@eqcnt\z@
41   \tabskip\@centering
```

```

42 \let\\\@eqncr
43 $$\everycr{}\halign to\displaywidth\bgroup
44 \hskip\@centering$\displaystyle\tabskip\z@skip{##}$\@eqnse
45 &\global\@eqcnt\@ne\hskip \tw@\arraycolsep \hfil${##}$\hfil
46 &\global\@eqcnt\tw@ \hskip \tw@\arraycolsep
47 $\displaystyle{##}$\hfil\tabskip\@centering
48 &\global\@eqcnt\thr@@ \hb@xt@\z@\bgroup\hss##\egroup
49 \tabskip\z@skip
50 \cr
51 }
52 \def\endEQNArray{%
53 \@@eqncr
54 \egroup
55 \global\advance\c@equation\m@ne
56 $$\@ignoretrue
57 }
58 \@namedef{EQNArray*}{\def\@eqncr{\nonumber\@seqncr}\EQNArray}
59 \@namedef{endEQNArray*}{\nonumber\endEQNArray}

```

Last but not least, if hyperref is loaded after eqnalign (and only in that case), we issue a warning since hyperref is doing bad things to eqnarray, and we redefine eqnalign once more.

```

60 \@ifpackageloaded{hyperref}{}{
61 \AtBeginDocument{
62 \ifpackageloaded{hyperref}{
63 \latex@warning{Package 'eqnalign' should be loaded after 'hyperref'.\MessageBreak
64 Redefining 'eqnarray' and 'eqnarray*' and crossing\MessageBreak fingers...}
65 \eqna@def@env
66 }{}
67 }
68 }

```

That's all.

```

69 \endinput
70 \</package>

```