

The `upgreek` package for L^AT_EX 2_ε

Walter Schmidt*

(v2.0 – 2003/02/12)

The default CM math fonts used by T_EX do not include upright lowercase Greek characters, and many alternative math font sets don't, either. (There are math fonts providing *only* an upright Greek alphabet, but that's a different story.) However, mathematical constants such as $\pi = 3.14\dots$ are sometimes required to be typeset in roman (i.e., upright) style, or one may need upright Greek to designate elementary particles.

As a workaround, the L^AT_EX package `upgreek` makes the upright Greek characters from the 'Euler' or 'Adobe Symbol' typefaces available as math symbols. The lowercase letters are named `\upalpha`, `\upbeta` etc., whereas `\Updelta`, `\Uppgamma` etc. create upper case.

Just like `\alpha`, `\beta` etc., these symbols work only in math mode, and their size is properly adjusted, when they are used in superscripts, subscripts or fractions.

At first sight, providing also the uppercase letters seems pointless, since `\Delta`, `\Gamma`, etc. are also upright by default. However, it may be useful to have all upright Greek letters available in the same style. Note that the uppercase letters were intentionally *not* named `\upDelta` etc., so as not to clash with other existent macro packages.

The typeface is selected using a package option, so you can choose what blends best with the other fonts used in your document:

[`Euler`] Euler Roman/Bold (default)

[`Symbol`] Adobe Symbol

[`Symbolsmallscale`] Adobe Symbol, scaled down to 90% of its natural size.
(New feature in version 2.0!)

Note that `\upmu` should normally *not* be used as the prefix for physical units, meaning 10^{-6} . The mu symbol to be used there is to be taken from the *text* font, and most Latin text fonts do actually include a suitable Greek mu, which can be accessed as `\textmu`. Most likely – depending on the encoding of your text fonts – you need to load the package `textcomp` for this purpose. If, however, there is no mu in your text fonts, using `\upmu` is still better than nothing. See also the `gensymb` package, which is distributed from the same CTAN directory than `upgreek`: It provides a command for 'micro' that works in both text and math mode and uses either `\textmu` or `\upmu`, depending on the available character sets.

*w.a.schmidt@gmx.net

The package code

```
1 (*package)
2 \DeclareOption{Symbol}{\let\uppi=s}
3 \DeclareOption{Symbolsmallscale}{\let\uppi m}
4 \DeclareOption{Euler}{\let\uppi=e}
5 \ExecuteOptions{Euler}
6 \ProcessOptions\relax
7 \ifx\uppi e
8   \PackageInfo{upgreek}{Using Euler Roman for upright Greek}
9   \DeclareFontFamily{U}{eur}{\skewchar\font'177}
10  \DeclareFontShape{U}{eur}{m}{n}{%
11    <-6> eurm5 <6-8> eurm7 <8-> eurm10}{}
12  \DeclareFontShape{U}{eur}{b}{n}{%
13    <-6> eurb5 <6-8> eurb7 <8-> eurb10}{}
14  \DeclareSymbolFont{ugrf@m}{U}{eur}{m}{n}
15  \SetSymbolFont{ugrf@m}{bold}{U}{eur}{b}{n}
16  \let\uppi\undefined
17  \DeclareMathSymbol{\upalph}{\mathord}{ugrf@m}{"0B}
18  \DeclareMathSymbol{\upbeta}{\mathord}{ugrf@m}{"0C}
19  \DeclareMathSymbol{\upgamma}{\mathord}{ugrf@m}{"0D}
20  \DeclareMathSymbol{\updelta}{\mathord}{ugrf@m}{"0E}
21  \DeclareMathSymbol{\upepsilon}{\mathord}{ugrf@m}{"0F}
22  \DeclareMathSymbol{\upzeta}{\mathord}{ugrf@m}{"10}
23  \DeclareMathSymbol{\upeta}{\mathord}{ugrf@m}{"11}
24  \DeclareMathSymbol{\uptheta}{\mathord}{ugrf@m}{"12}
25  \DeclareMathSymbol{\upiota}{\mathord}{ugrf@m}{"13}
26  \DeclareMathSymbol{\upkappa}{\mathord}{ugrf@m}{"14}
27  \DeclareMathSymbol{\uplambda}{\mathord}{ugrf@m}{"15}
28  \DeclareMathSymbol{\upmu}{\mathord}{ugrf@m}{"16}
29  \DeclareMathSymbol{\upnu}{\mathord}{ugrf@m}{"17}
30  \DeclareMathSymbol{\upxi}{\mathord}{ugrf@m}{"18}
31  \DeclareMathSymbol{\uppi}{\mathord}{ugrf@m}{"19}
32  \DeclareMathSymbol{\uprho}{\mathord}{ugrf@m}{"1A}
33  \DeclareMathSymbol{\upsigma}{\mathord}{ugrf@m}{"1B}
34  \DeclareMathSymbol{\uptau}{\mathord}{ugrf@m}{"1C}
35  \DeclareMathSymbol{\upupsilon}{\mathord}{ugrf@m}{"1D}
36  \DeclareMathSymbol{\upphi}{\mathord}{ugrf@m}{"1E}
37  \DeclareMathSymbol{\upchi}{\mathord}{ugrf@m}{"1F}
38  \DeclareMathSymbol{\uppsi}{\mathord}{ugrf@m}{"20}
39  \DeclareMathSymbol{\upomega}{\mathord}{ugrf@m}{"21}
40  \DeclareMathSymbol{\upvarepsilon}{\mathord}{ugrf@m}{"22}
41  \DeclareMathSymbol{\upvartheta}{\mathord}{ugrf@m}{"23}
42  \DeclareMathSymbol{\upvarpi}{\mathord}{ugrf@m}{"24}
43  \let\upvarrho\uprho
44  \let\upvarsigma\upsigma
45  \DeclareMathSymbol{\upvarphi}{\mathord}{ugrf@m}{"27}
46  \DeclareMathSymbol{\Upgamma}{\mathord}{ugrf@m}{"00}
47  \DeclareMathSymbol{\Updelta}{\mathord}{ugrf@m}{"01}
48  \DeclareMathSymbol{\Uptheta}{\mathord}{ugrf@m}{"02}
49  \DeclareMathSymbol{\Uplambda}{\mathord}{ugrf@m}{"03}
50  \DeclareMathSymbol{\Upxi}{\mathord}{ugrf@m}{"04}
51  \DeclareMathSymbol{\Uppi}{\mathord}{ugrf@m}{"05}
52  \DeclareMathSymbol{\Upsilon}{\mathord}{ugrf@m}{"06}
```

```

53 \DeclareMathSymbol{\Upupsilon}{\mathord}{ugrf@}{"07}
54 \DeclareMathSymbol{\Upphi}{\mathord}{ugrf@}{"08}
55 \DeclareMathSymbol{\Uppsi}{\mathord}{ugrf@}{"09}
56 \DeclareMathSymbol{\Upomega}{\mathord}{ugrf@}{"0A}
57 \else
58 \ifx\uppi s
59 \PackageInfo{upgreek}{Using Adobe Symbol for upright Greek}
60 \DeclareSymbolFont{ugrf@}{U}{psy}{m}{n}
61 \else % m
62 \PackageInfo{upgreek}{Using Adobe Symbol, scaled 900, for upright Greek}
63 \DeclareFontFamily{U}{fsy}{}
64 \DeclareFontShape{U}{fsy}{m}{n}{<->s* [.9]psyr}{}
65 \DeclareSymbolFont{ugrf@}{U}{fsy}{m}{n}
66 \fi
67 \let\uppi\undefined
68 \DeclareMathSymbol{\upalpha}{\mathord}{ugrf@}{'a}
69 \DeclareMathSymbol{\upbeta}{\mathord}{ugrf@}{'b}
70 \DeclareMathSymbol{\upgamma}{\mathord}{ugrf@}{'g}
71 \DeclareMathSymbol{\updelta}{\mathord}{ugrf@}{'d}
72 \DeclareMathSymbol{\upepsilon}{\mathord}{ugrf@}{'e}
73 \DeclareMathSymbol{\upzeta}{\mathord}{ugrf@}{'z}
74 \DeclareMathSymbol{\upeta}{\mathord}{ugrf@}{'h}
75 \DeclareMathSymbol{\uptheta}{\mathord}{ugrf@}{'q}
76 \DeclareMathSymbol{\upiota}{\mathord}{ugrf@}{'i}
77 \DeclareMathSymbol{\upkappa}{\mathord}{ugrf@}{'k}
78 \DeclareMathSymbol{\uplambda}{\mathord}{ugrf@}{'l}
79 \DeclareMathSymbol{\upmu}{\mathord}{ugrf@}{'m}
80 \DeclareMathSymbol{\upnu}{\mathord}{ugrf@}{'n}
81 \DeclareMathSymbol{\upxi}{\mathord}{ugrf@}{'x}
82 \DeclareMathSymbol{\uppi}{\mathord}{ugrf@}{'p}
83 \DeclareMathSymbol{\uprho}{\mathord}{ugrf@}{'r}
84 \DeclareMathSymbol{\upsigma}{\mathord}{ugrf@}{'s}
85 \DeclareMathSymbol{\uptau}{\mathord}{ugrf@}{'t}
86 \DeclareMathSymbol{\upupsilon}{\mathord}{ugrf@}{'u}
87 \DeclareMathSymbol{\upphi}{\mathord}{ugrf@}{'f}
88 \DeclareMathSymbol{\upchi}{\mathord}{ugrf@}{'c}
89 \DeclareMathSymbol{\uppsi}{\mathord}{ugrf@}{'y}
90 \DeclareMathSymbol{\upomega}{\mathord}{ugrf@}{'w}
91 \let\upvarepsilon\upepsilon
92 \DeclareMathSymbol{\upvartheta}{\mathord}{ugrf@}{'J}
93 \DeclareMathSymbol{\upvarpi}{\mathord}{ugrf@}{'v}
94 \let\upvarrho\uprho
95 \let\upvarsigma\upsigma
96 \DeclareMathSymbol{\upvarphi}{\mathord}{ugrf@}{'j}
97 \DeclareMathSymbol{\Upgamma}{\mathord}{ugrf@}{'G}
98 \DeclareMathSymbol{\Updelta}{\mathord}{ugrf@}{'D}
99 \DeclareMathSymbol{\Uptheta}{\mathord}{ugrf@}{'Q}
100 \DeclareMathSymbol{\Uplambda}{\mathord}{ugrf@}{'L}
101 \DeclareMathSymbol{\Upxi}{\mathord}{ugrf@}{'X}
102 \DeclareMathSymbol{\Uppi}{\mathord}{ugrf@}{'P}
103 \DeclareMathSymbol{\Upsigma}{\mathord}{ugrf@}{'S}
104 \DeclareMathSymbol{\Upupsilon}{\mathord}{ugrf@}{'U}
105 \DeclareMathSymbol{\Upphi}{\mathord}{ugrf@}{'F}
106 \DeclareMathSymbol{\Uppsi}{\mathord}{ugrf@}{'Y}

```

```
107 \DeclareMathSymbol{\Upomega}{\mathord}{ugrf@m}{'W}  
108 \fi  
109 \endpackage
```

The next line of code is only to prevent DocStrip from adding the character table to all modules:

```
110 \endinput
```