

# fmocdmac — FM's OCD L<sup>A</sup>T<sub>E</sub>X Macro\*

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Released 2023/06/09

## Abstract

This package contains almost all the latex macros I heavily use in my tcs research activity and, in particular, in the writing of conference and journal articles. As few of my co-authors have kindly pointed out, and probably many have thought, they are somehow a clear expression of an underlying ocd-like behavior... hence the name!

## 1 Implementation & Usage

1 `\package`

### Required external packages:

```
2
3 \RequirePackage{etoolbox}
4
5 \RequirePackage{xargs}
6 \RequirePackage{xspace}
7 \RequirePackage{stringstrings}
8
```

### Package options:

```
9
10 %% Auxiliary packages
11 \newif\ifaux@ \aux@false
12 \DeclareOption{aux}{\aux@true}
13 \DeclareOption{noaux}{\aux@false}
14
15 %% AMS defaults
16 \newif\ifamsdef@ \amsdef@true
17 \DeclareOption{noamsdef}{\amsdef@false}
18
19 %% AMS theorem tools
20 \newif\ifamsthm@ \amsthm@true
21 \DeclareOption{noamsthm}{\amsthm@false}
22
23 %% Extended Theorem tools
24 \newif\ifthmtls@ \thmtls@true
25 \DeclareOption{nothmtls}{\thmtls@false}
26
27 %% Enumeration tools
28 \newif\ifenmtls@ \enmtls@true
29 \DeclareOption{noenmtls}{\enmtls@false}
30
31 %% Hyper reference
32 \newif\ifhympref@ \hympref@true
33 \DeclareOption{nohympref}{\hympref@false}
34
```

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\*This document describes version v0.19 of the fmocdmac package, last revised 2023/06/09.

```

35 %% Font tools
36 \newif\iffnttts@ \fnttts@true
37 \DeclareOption{nofnttts}{\fnttts@false}
38
39 %% Camera-ready version
40 \newif\ifcrv@ \crv@false
41 \DeclareOption{crv}{\crv@true}
42
43 %% Change bars
44 \newif\ifchgbar@ \chgbar@false
45 \DeclareOption{chgbar}{\chgbar@true}
46
47 %% Line numbers
48 \newif\iflinnum@ \linnum@false
49 \DeclareOption{linnum}{\linnum@true}
50
51
52 %% Text macro generation
53 \newif\iftxtgen@ \txtgen@false
54 \DeclareOption{txtgen}{\txtgen@true}
55 \DeclareOption{notxtgen}
56   {\txtgen@false\txt@false\com@false\gam@false\log@false\aut@false}
57
58 %% Math macro generation
59 \newif\ifmthgen@ \mthgen@false
60 \DeclareOption{mthgen}{\mthgen@true}
61 \DeclareOption{nomthgen}
62   {\mthgen@false\mth@false\gam@false\log@false\aut@false}
63
64
65 %% Elementary macros for text
66 \newif\iftxt@ \txt@false
67 \DeclareOption{txt}{\txt@true\txtgen@true}
68 \DeclareOption{notxt}{\txt@false}
69
70 %% Elementary macros for math
71 \newif\ifmth@ \mth@false
72 \DeclareOption{mth}{\mth@true\mthgen@true}
73 \DeclareOption{nomth}{\mth@false}
74
75
76 %% Macros for computational-complexity classes
77 \newif\ifcom@ \com@false
78 \DeclareOption{com}{\com@true\txtgen@true}
79 \DeclareOption{nocom}{\com@false}
80
81
82 %% Macros for games
83 \newif\ifgam@ \gam@false
84 \DeclareOption{gam}{\gam@true\txtgen@true\mthgen@true}
85 \DeclareOption{nogam}{\gam@false}
86
87 %% Macros for logics
88 \newif\iflog@ \log@false
89 \DeclareOption{log}{\log@true\txtgen@true\mthgen@true}
90 \DeclareOption{nolog}{\log@false}
91
92 %% Macros for automata
93 \newif\ifaut@ \aut@false
94 \DeclareOption{aut}{\aut@true\txtgen@true\mthgen@true}
95 \DeclareOption{noaut}{\aut@false}
96
97

```

```

98 %% Format-related tricks
99 \newif\iffrm@ \frm@false
100 \DeclareOption{frm}{\frm@true}
101 \DeclareOption{nofrm}{\frm@false}
102
103
104 %% Figure-related tricks
105 \newif\iffig@ \fig@false
106 \DeclareOption{fig}{\fig@true}
107 \DeclareOption{nofig}{\fig@false}
108
109 %% Wrapfig package
110 \newif\ifwrpfig@ \wrpfig@true
111 \DeclareOption{nowrpfig}{\wrpfig@false}
112
113
114 %% Table-related tricks
115 \newif\iftab@ \tab@false
116 \DeclareOption{tab}{\tab@true}
117 \DeclareOption{notab}{\tab@false}
118
119
120 %% Algorithm-related tricks
121 \newif\ifalg@ \alg@false
122 \DeclareOption{alg}{\alg@true}
123 \DeclareOption{noalg}{\alg@false}
124

```

### Option-processing code:

```

125
126 \DeclareOption*{\PackageWarning{fmocdmac}{Unknown~'\CurrentOption'}}%
127
128 \ExecuteOptions{aux,txtgen,mthgen,txt,mth,com,gam,log,aut}%
129
130 \ProcessOptions\relax%
131
132 \ifcsdef{if@twocolumn}{\newif\if@twocolumn}
133

```

### Package main body:

```

134
135 %%*****%
136 %** Auxiliary Alphabet Letters *****%
137 %*****%

```

`\omicron` **Auxiliary Greek lowercase letter: ... to do!**

```
138 \csdef{omicron}{o}
```

`\Alpha`, ... **Auxiliary Greek uppercase letters: ... to do!**

```

139 \csdef{Alpha}{A} \csdef{Beta}{B} \csdef{Epsilon}{E} \csdef{varEpsilon}{E}
140 \csdef{Zeta}{Z} \csdef{Eta}{H} \csdef{Iota}{I} \csdef{Kappa}{K}
141 \csdef{varKappa}{K} \csdef{Mu}{M} \csdef{Nu}{N} \csdef{Omicron}{O}
142 \csdef{Rho}{P} \csdef{varRho}{P} \csdef{Tau}{T} \csdef{Chi}{X}

```

```

143 %%*****%
144 %*****%
145 %** Tools *****%
146 %*****%

```

`\empchk` **Emptiness check:** `\empchk{⟨A⟩}{⟨B⟩}` evaluates to the empty string, if Argument  $\langle A \rangle$  is empty, and to Argument  $\langle B \rangle$ , otherwise.

- `\empchk{}{B}` = “”
- `\empchk{A}{B}` = “B”

```

147 \newcommand{\empchk}[2]
148   {\if&#1&\else#2\fi}

\defval Default value: \defval{<A>}{<B>} evaluates to Argument <B>, if Argument <A> is empty, and to
Argument <A> itself, otherwise.
    • \defval{}{B} = “B”
    • \defval{A}{B} = “A”
149 \newcommand{\defval}[2]
150   {\if&#1&#2\else#1\fi}

151 %%*****%

\arglef Left extension: \arglef{<A>}{<B>} evaluates to the concatenation <AB> of the two arguments, if
Argument <B> is non-empty, and to the empty string, otherwise.
    • \arglef{A}{} = “”
    • \arglef{A}{B} = “AB”
152 \newcommand{\arglef}[2]
153   {\empchk{#2}{#1#2}}

\argrig Right extension: \argrig{<A>}{<B>} evaluates to the concatenation <AB> of the two arguments,
if Argument <A> is non-empty, and to the empty string, otherwise.
    • \argrig{}{B} = “”
    • \argrig{A}{B} = “AB”
154 \newcommand{\argrig}[2]
155   {\empchk{#1}{#1#2}}

\argmid Middle extension: \argmid{<A>}{<B>}{<C>} evaluates to the concatenation <ABC> of the three
arguments, if Argument <B> is non-empty, and to the empty string, otherwise.
    • \argmid{A}{}{C} = “”
    • \argmid{A}{B}{C} = “ABC”
156 \newcommand{\argmid}[3]
157   {\empchk{#2}{#1#2#3}}

\argsep Separators: \argsep{<A>}{<B>}{<C>} evaluates to Argument <C>, if Argument <A> is empty, to
Argument <A>, if Argument <C> is empty, and to the concatenation <ABC>, otherwise.
    • \argsep{}{B}{C} = “C”
    • \argsep{A}{B}{} = “A”
    • \argsep{A}{}{C} = “AC”
    • \argsep{A}{B}{C} = “ABC”
158 \newcommand{\argsep}[3]
159   {\if&#1&#3\else#1\arglef{#2}{#3}\fi}

160 %%*****%

\varcmd Variadic commands: \varcmd{<A>}{<B>}{<C>}{<D>}{<E>}{<F>} ... to do!
161 \newcommand{\varcmd}[6]
162   {\expandafter\newcommand\csname gobble#1arg\endcsname[2]
163     {\csname check#1arg\endcsname{\argsep{##1}{#4}{\empchk{##2}{#{##2}}}}}
164   \expandafter\newcommand\csname check#1arg\endcsname[1]
165     {\csname @ifnextchar\endcsname%
166       \bgroup{\csname gobble#1arg\endcsname{##1}{#2{##1#5}#6}}%
167     \expandafter\newcommand\csname#1\endcsname[1]
168     {\csname check#1arg\endcsname{#3##1}}}

169 %%*****%

```

```

\seqoftag Sequence of tags: \seqoftag{⟨A⟩}{⟨B⟩}{⟨C⟩} ... to do!
170 \newcommand{\seqoftag}[3]
171   {\@for\itr:={#1}\do%
172     {\expandafter\csedef{\itr#2}%
173       {\noexpand\csname #3\endcsname{\itr}}}}

\seqofcmd Sequence of commands: \seqofcmd{⟨A⟩}{⟨B⟩}{⟨C⟩} ... to do!
174 \newcommand{\seqofcmd}[3]
175   {\@for\itr:={#1}\do%
176     {\expandafter\csedef{\itr#2}%
177       {\noexpand\csname #3\endcsname{\csname \itr\endcsname}}}}

178 %%*****%

\seqoflatlow Sequence of Latin lowercase letters: \seqoflatlow{⟨A⟩}{⟨B⟩} ... to do!
179 \newcommand{\seqoflatlow}
180   {\seqoftag{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z}}

\seqoflatupp Sequence of Latin uppercase letters: \seqoflatupp{⟨A⟩}{⟨B⟩} ... to do!
181 \newcommand{\seqoflatupp}
182   {\seqoftag{A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z}}

\seqoflatlet Sequence of Latin letters: \seqoflatlet{⟨A⟩}{⟨B⟩} ... to do!
183 \newcommand{\seqoflatlet}[2]
184   {\seqoflatlow{#1}{#2}\seqoflatupp{#1}{#2}}

185 %%*****%

\seqofgrklow Sequence of Greek lowercase letters: \seqofgrklow{⟨A⟩}{⟨B⟩} ... to do!
186 \newcommand{\seqofgrklow}
187   {\seqofcmd{alpha,beta,gamma,delta,epsilon,varepsilon,zeta,eta,theta,vartheta,%
188     iota,kappa,varkappa,lambda,mu,nu,xi,omicron,pi,varpi,rho,varrho,sigma,%
189     varsigma,tau,upsilon,phi,varphi,chi,psi,omega}}

\seqofgrkupp Sequence of Greek uppercase letters: \seqofgrkupp{⟨A⟩}{⟨B⟩} ... to do!
190 \newcommand{\seqofgrkupp}
191   {\seqofcmd{Alpha,Beta,Gamma,Delta,Epsilon,varEpsilon,Zeta,Eta,Theta,varTheta,%
192     Iota,Kappa,varKappa,Lambda,Mu,Nu,Xi,Omicron,Pi,varPi,Rho,varRho,Sigma,%
193     varSigma,Tau,Upsilon,Phi,varPhi,Chi,Psi,Omega}}

\seqofgrklet Sequence of Greek letters: \seqofgrklet{⟨A⟩}{⟨B⟩} ... to do!
194 \newcommand{\seqofgrklet}[2]
195   {\seqofgrklow{#1}{#2}\seqofgrkupp{#1}{#2}}

196 %%*****%

\seqoflow Sequence of lowercase letters: \seqoflow{⟨A⟩}{⟨B⟩} ... to do!
197 \newcommand{\seqoflow}[2]
198   {\seqoflatlow{#1}{#2}\seqofgrklow{#1}{#2}}

\seqofupp Sequence of uppercase letters: \seqofupp{⟨A⟩}{⟨B⟩} ... to do!
199 \newcommand{\seqofupp}[2]
200   {\seqoflatupp{#1}{#2}\seqofgrkupp{#1}{#2}}

\seqoflet Sequence of all letters: \seqoflet{⟨A⟩}{⟨B⟩} ... to do!
201 \newcommand{\seqoflet}[2]
202   {\seqoflow{#1}{#2}\seqofupp{#1}{#2}}

203 %%*****%

```

```

204 %*****%
205 %** Auxiliary Packages *****%
206 %*****%
207 \ifaux@
208
209 \ifamsdef@
210 % AMS Packages
211 \RequirePackage{mathtools}
212 \RequirePackage{amssymb}
213 \RequirePackage{stmaryrd}
214 \interdisplaylinepenalty=2500
215 \fi
216
217 \ifamsthm@
218 % AMS Theorem Tools
219 \RequirePackage{amsthm}
220 \fi
221
222 \ifthmtls@
223 % Extended Theorem Tools
224 \RequirePackage{thmtools, thm-restate}
225 \fi
226
227 \ifenmtls@
228 % Enumeration Tools
229 \RequirePackage{paralist}
230 \fi
231
232 \ifhympref@
233 % Hyper References
234 \RequirePackage{hyperref}
235 \hypersetup {
236     pdfsubject    = {},
237     pdfkeywords   = {},
238     pdfproducer   = {},
239     pdfcreator    = {},
240     pdfpagemode   = {UseNone},
241     pdfstartview  = {FitH},
242     urlcolor      = {blue},
243     colorlinks
244 }
245 \fi
246
247 \iffnttts@
248 % Font Tools
249 \RequirePackage[final]{microtype}
250 \fi
251
252 \ifcrv@
253 % Camera-Ready Version
254
255 %...
256
257 \else
258 % Draft Version
259
260 %...
261
262 \ifchgbar@
263 % Change Bars
264 \RequirePackage{changebar}
265 \fi
266

```

```

267 \iflinnum@
268 % Line Numbers
269 \if@twocolumn
270 \RequirePackage[switch, columnwise, mathlines]{lineno}\linenumbers
271 \else
272 \RequirePackage[columnwise, mathlines]{lineno}\linenumbers
273 \fi
274 \fi
275
276 %...
277
278 \fi
279
280 \fi
281 %*****%
282 %*****%
283 %** Auxiliary Font Declarations *****%
284 %*****%

```

**\mathbbo Bbo Math Font: ... to do!**

```
285 \ifdef{\mathbbo}{\DeclareMathAlphabet{\mathbbo}{U}{bbold}{m}{n}}
```

**\matheus Eus Math Font: ... to do!**

```
286 \ifdef{\matheus}{\DeclareMathAlphabet{\matheus}{U}{eus}{m}{n}}
```

**\mathpzc Pzc Math Font: ... to do!**

```
287 \ifdef{\mathpzc}{\DeclareMathAlphabet{\mathpzc}{T1}{pzc}{m}{it}}
```

**\mathscr Scr Math Font: ... to do!**

```
288 \ifdef{\mathscr}{\DeclareMathAlphabet{\mathscr}{U}{rsfs}{m}{n}}
```

```

289 %*****%
290 %*****%
291 %** Text Meta Commands *****%
292 %*****%

```

**\newtxt ... to do!**

- $\newtxt[\rmfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxt[\sfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxt[\ttfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxt*[\rmfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxt*[\sfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxt*[\ttfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$

```

293 \newcommand{\newtxt}
294 {\@ifstar{\@snewtxt}{\@newtxt}}
295 \newcommandx{\@newtxt}[5][1=, 3=, 4=, 5=]
296 {\text{\#1\#2\txsubsup\#1\#3\#4\#5}\xspace}
297 \newcommandx{\@snewtxt}[5][1=, 3=, 4=, 5=]
298 {\#1\#2\txsubsup\#1\#3\#4\#5\normalfont\xspace}

```

**\newtxtsty ... to do!**

- $\newtxtsty[\rmfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxtsty[\rmfamily][\sfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxtsty[\rmfamily][\ttfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxtsty*[\rmfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxtsty*[\rmfamily][\sfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$
- $\newtxtsty*[\rmfamily][\ttfamily]{Name}_{sub}^{sup}[Ext] = \text{“Name}_{sub}^{sup}Ext\text{”}$

```

299 \newcommand{\newtxtsty}
300   {\@ifstar{\@snewtxtsty}{\@newtxtsty}}
301 \newcommandx{\@newtxtsty}[2][2=]
302   {\newtxt[\defval{#2}{#1}]}
303 \newcommandx{\@snewtxtsty}[2][2=]
304   {\newtxt*[\defval{#2}{#1}]}

```

\newtxtarg ... to do!

- \newtxtarg[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtarg[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtarg[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtarg\*[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtarg\*[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtarg\*[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”

```

305 \newcommand{\newtxtarg}
306   {\@ifstar{\@snewtxtarg}{\@newtxtarg}}
307 \newcommandx{\@newtxtarg}[7][1=, 3=, 4=, 5=, 7=]
308   {\newtxt[#1]{#2}[#3][#4][\argmid{#5}{#6}{#7}]}
309 \newcommandx{\@snewtxtarg}[7][1=, 3=, 4=, 5=, 7=]
310   {\newtxt*[#1]{#2}[#3][#4][\argmid{#5}{#6}{#7}]}

```

\newtxtargsty ... to do!

- \newtxtargsty[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtargsty[\rmfamily][\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtargsty[\rmfamily][\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtargsty\*[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtargsty\*[\rmfamily][\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”
- \newtxtargsty\*[\rmfamily][\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name<sup>sub</sup>Ext1(Arg)Ext2”

```

311 \newcommand{\newtxtargsty}
312   {\@ifstar{\@snewtxtargsty}{\@newtxtargsty}}
313 \newcommandx{\@newtxtargsty}[2][2=]
314   {\newtxtarg[\defval{#2}{#1}]}
315 \newcommandx{\@snewtxtargsty}[2][2=]
316   {\newtxtarg*[\defval{#2}{#1}]}

```

\newtxtoarg ... to do!

- \newtxtoarg[\rmfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoarg[\sffamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoarg[\ttfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoarg\*[\rmfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoarg\*[\sffamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoarg\*[\ttfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”

```

317 \newcommand{\newtxtoarg}
318   {\@ifstar{\@snewtxtoarg}{\@newtxtoarg}}
319 \newcommandx{\@newtxtoarg}[5][1=, 3=, 4=, 5=]
320   {\newxtarg[#1]{#2}[#3][#4][\#5]}
321 \newcommandx{\@snewtxtoarg}[5][1=, 3=, 4=, 5=]
322   {\newxtarg*[#1]{#2}[#3][#4][\#5]}

```

\newtxtoargsty ... to do!

- \newtxtoargsty[\rmfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoargsty[\rmfamily][\sffamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoargsty[\rmfamily][\ttfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoargsty\*[\rmfamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”
- \newtxtoargsty\*[\rmfamily][\sffamily]{Name}[sub][sup][Arg] = “Name<sup>sub</sup>(Arg)”



- $\backslash\text{newtxtoargsty}\{\backslash\text{rmfamily}\}\{\backslash\text{ttfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Arg}] = \text{“Name}_{\text{sub}}^{\text{sup}}(\text{Arg})\text{”}$

```

323 \newcommand{\newtxtoargsty}
324   {\@ifstar{\@snewtxtoargsty}{\@newtxtoargsty}}
325 \newcommandx{\@newtxtoargsty}[2][2=]
326   {\newtxtoarg[\defval{#2}{#1}]}
327 \newcommandx{\@snewtxtoargsty}[2][2=]
328   {\newtxtoarg*[\defval{#2}{#1}]}

```

$\backslash\text{newtxtpar}$  ... to do!

- $\backslash\text{newtxtpar}[\backslash\text{rmfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtpar}[\backslash\text{sffamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtpar}[\backslash\text{ttfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtpar}*\{\backslash\text{rmfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtpar}*\{\backslash\text{sffamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtpar}*\{\backslash\text{ttfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$

```

329 \newcommand{\newtxtpar}
330   {\@ifstar{\@snewtxtpar}{\@newtxtpar}}
331 \newcommandx{\@newtxtpar}[7][1=, 3=, 4=, 5=, 7=]
332   {\newtxt{#1}{#2}{#3}{#4}[\argmid{#5}{#6}{#7}]}
333 \newcommandx{\@snewtxtpar}[7][1=, 3=, 4=, 5=, 7=]
334   {\newtxt*{#1}{#2}{#3}{#4}[\argmid{#5}{#6}{#7}]}

```

$\backslash\text{newtxtparsty}$  ... to do!

- $\backslash\text{newtxtparsty}[\backslash\text{rmfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtparsty}[\backslash\text{rmfamily}][\backslash\text{sffamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtparsty}[\backslash\text{rmfamily}][\backslash\text{ttfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtparsty}*\{\backslash\text{rmfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtparsty}*\{\backslash\text{rmfamily}\}[\backslash\text{sffamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$
- $\backslash\text{newtxtparsty}*\{\backslash\text{rmfamily}\}[\backslash\text{ttfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{“Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}”$

```

335 \newcommand{\newtxtparsty}
336   {\@ifstar{\@snewtxtparsty}{\@newtxtparsty}}
337 \newcommandx{\@newtxtparsty}[2][2=]
338   {\newtxtpar[\defval{#2}{#1}]}
339 \newcommandx{\@snewtxtparsty}[2][2=]
340   {\newtxtpar*[\defval{#2}{#1}]}

```

$\backslash\text{newtxtopar}$  ... to do!

- $\backslash\text{newtxtopar}[\backslash\text{rmfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtopar}[\backslash\text{sffamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtopar}[\backslash\text{ttfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtopar}*\{\backslash\text{rmfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtopar}*\{\backslash\text{sffamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtopar}*\{\backslash\text{ttfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$

```

341 \newcommand{\newtxtopar}
342   {\@ifstar{\@snewtxtopar}{\@newtxtopar}}
343 \newcommandx{\@newtxtopar}[5][1=, 3=, 4=, 5=]
344   {\newtxtpar{#1}{#2}{#3}{#4}[\#5]}
345 \newcommandx{\@snewtxtopar}[5][1=, 3=, 4=, 5=]
346   {\newtxtpar*{#1}{#2}{#3}{#4}[\#5]}

```

$\backslash\text{newtxtoparsty}$  ... to do!

- $\backslash\text{newtxtoparsty}[\backslash\text{rmfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtoparsty}[\backslash\text{rmfamily}][\backslash\text{sffamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtoparsty}[\backslash\text{rmfamily}][\backslash\text{ttfamily}]\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$
- $\backslash\text{newtxtoparsty}*\{\backslash\text{rmfamily}\}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Par}] = \text{“Name}_{\text{sub}}^{\text{sup}}[\text{Par}]”$

- $\newtxtoparsty*\{\rmfamily\}[\sfamily]{Name}[sub][sup][Par] = \text{“Name}_{sub}^{sup}[Par]”$
- $\newtxtoparsty*\{\rmfamily\}[\ttfamily]{Name}[sub][sup][Par] = \text{“Name}_{sub}^{sup}[Par]”$

```

347 \newcommand{\newtxtoparsty}
348   {\@ifstar{\@snewtxtoparsty}{\@newtxtoparsty}}
349 \newcommandx{\@newtxtoparsty}[2][2=]
350   {\newtxtopar[\defval{#2}{#1}]}
351 \newcommandx{\@snewtxtoparsty}[2][2=]
352   {\newtxtopar*[\defval{#2}{#1}]}

```

$\texttt{\textbackslash txtsubsup}$  ... to do!

- $\texttt{\textbackslash txtsubsup}\{sub\}\{\} = \text{“}_{sub}”$ ;  $\texttt{\textbackslash txtsubsup}\{\}\{sup\} = \text{“}^{sup}”$ ;  $\texttt{\textbackslash txtsubsup}\{sub\}\{sup\} = \text{“}_{sub}^{sup}”$
- $\texttt{\textbackslash txtsubsup}[\sfamily]\{Aa\}\{Bb\} = \text{“}_{Aa}^{Bb}”$
- $\texttt{\textbackslash txtsubsup}[\ttfamily]\{Aa\}\{Bb\} = \text{“}_{Aa}^{Bb}”$

```

353 \newcommand{\txtsubsup}[3][ ]
354   {\ensuremath{\empchk{#2}\_{{\text{#1#2}}}\empchk{#3}\_{{\text{#1#3}}}}}

```

355 %\*\*\*\*\*%

$\texttt{\textbackslash txt}$  ... to do!

- $\texttt{\textbackslash txt}\{Name\}[sub][sup][Ext] = \text{“Name}_{sub}^{sup}Ext”$
- $\texttt{\textbackslash txt}[\scshape]\{Name\}[sub][sup][Ext] = \text{“NAME}_{SUB}^{SUP}EXT”$
- $\texttt{\textbackslash txt}[\bfseries]\{Name\}[sub][sup][Ext] = \text{“Name}_{sub}^{sup}Ext”$
- $\texttt{\textbackslash txt*}\{Name\}[sub][sup][Ext] = \text{“Name}_{sub}^{sup}Ext”$
- $\texttt{\textbackslash txt*}[\scshape]\{Name\}[sub][sup][Ext] = \text{“NAME}_{SUB}^{SUP}EXT”$
- $\texttt{\textbackslash txt*}[\bfseries]\{Name\}[sub][sup][Ext] = \text{“Name}_{sub}^{sup}Ext”$

```

356 \newcommand{\txt}
357   {\@ifstar{\newtxtsty{\txtsty}}{\newtxtsty*{\txtsty}}}

```

$\texttt{\textbackslash txtarg}$  ... to do!

- $\texttt{\textbackslash txtarg}\{Name\}[sub][sup][Ext1]\{Arg\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1(Arg)Ext2”$
- $\texttt{\textbackslash txtarg}[\scshape]\{Name\}[sub][sup][Ext1]\{Arg\}[Ext2] = \text{“NAME}_{SUB}^{SUP}EXT1(ARG)EXT2”$
- $\texttt{\textbackslash txtarg}[\bfseries]\{Name\}[sub][sup][Ext1]\{Arg\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1(Arg)Ext2”$
- $\texttt{\textbackslash txtarg*}\{Name\}[sub][sup][Ext1]\{Arg\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1(Arg)Ext2”$
- $\texttt{\textbackslash txtarg*}[\scshape]\{Name\}[sub][sup][Ext1]\{Arg\}[Ext2] = \text{“NAME}_{SUB}^{SUP}EXT1(ARG)EXT2”$
- $\texttt{\textbackslash txtarg*}[\bfseries]\{Name\}[sub][sup][Ext1]\{Arg\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1(Arg)Ext2”$

```

358 \newcommand{\txtarg}
359   {\@ifstar{\newtxtargsty{\txtsty}}{\newtxtargsty*{\txtsty}}}

```

$\texttt{\textbackslash txtoarg}$  ... to do!

- $\texttt{\textbackslash txtoarg}\{Name\}[sub][sup][Arg] = \text{“Name}_{sub}^{sup}(Arg)”$
- $\texttt{\textbackslash txtoarg}[\scshape]\{Name\}[sub][sup][Arg] = \text{“NAME}_{SUB}^{SUP}(ARG)”$
- $\texttt{\textbackslash txtoarg}[\bfseries]\{Name\}[sub][sup][Arg] = \text{“Name}_{sub}^{sup}(Arg)”$
- $\texttt{\textbackslash txtoarg*}\{Name\}[sub][sup][Arg] = \text{“Name}_{sub}^{sup}(Arg)”$
- $\texttt{\textbackslash txtoarg*}[\scshape]\{Name\}[sub][sup][Arg] = \text{“NAME}_{SUB}^{SUP}(ARG)”$
- $\texttt{\textbackslash txtoarg*}[\bfseries]\{Name\}[sub][sup][Arg] = \text{“Name}_{sub}^{sup}(Arg)”$

```

360 \newcommand{\txtoarg}
361   {\@ifstar{\newtxtoargsty{\txtsty}}{\newtxtoargsty*{\txtsty}}}

```

$\texttt{\textbackslash txtpar}$  ... to do!

- $\texttt{\textbackslash txtpar}\{Name\}[sub][sup][Ext1]\{Par\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1[Par]Ext2”$
- $\texttt{\textbackslash txtpar}[\scshape]\{Name\}[sub][sup][Ext1]\{Par\}[Ext2] = \text{“NAME}_{SUB}^{SUP}EXT1[PAR]EXT2”$
- $\texttt{\textbackslash txtpar}[\bfseries]\{Name\}[sub][sup][Ext1]\{Par\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1[Par]Ext2”$
- $\texttt{\textbackslash txtpar*}\{Name\}[sub][sup][Ext1]\{Par\}[Ext2] = \text{“Name}_{sub}^{sup}Ext1[Par]Ext2”$
- $\texttt{\textbackslash txtpar*}[\scshape]\{Name\}[sub][sup][Ext1]\{Par\}[Ext2] = \text{“NAME}_{SUB}^{SUP}EXT1[PAR]EXT2”$

```

    • \txtpar*[\bfseries]{Name}[sub][sup][Ext1]{Par}[Ext2] = "NamesupsubExt1[Par]Ext2"
362 \newcommand{\txtpar}
363   {\@ifstar{\newtxtparsty{\txtsty}}{\newtxtparsty*{\txtsty}}}

\txtopar ... to do!
    • \txtopar{Name}[sub][sup][Par] = "Namesupsub[Par]"
    • \txtopar[\scshape]{Name}[sub][sup][Par] = "NAMEsupSUB[PAR]"
    • \txtopar[\bfseries]{Name}[sub][sup][Par] = "Namesupsub[Par]"
    • \txtopar*{Name}[sub][sup][Par] = "Namesupsub[Par]"
    • \txtopar*[\scshape]{Name}[sub][sup][Par] = "NAMEsupSUB[PAR]"
    • \txtopar*[\bfseries]{Name}[sub][sup][Par] = "Namesupsub[Par]"
364 \newcommand{\txtopar}
365   {\@ifstar{\newtxtoparsty{\txtsty}}{\newtxtoparsty*{\txtsty}}}

\txtsty ... to do!
366 \newcommand{\txtsty}
367   {\mdseries\upshape\rmfamily}

368 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\cmdtxt ... to do!
    • \cmdtxt{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtNewCmd{Name}[sub][sup][Ext] = NAMEsupSUBEXT
      \txtNewCmd*{Name}[sub][sup][Ext] = NAMEsupSUBEXT
369 \newcommand{\cmdtxt}[1]
370   {\csdef{txt#1}%
371     {\@ifstar%
372       {\newtxtsty*\csname txtsty#1\endcsname}}%
373     {\newtxtsty{\csname txtsty#1\endcsname}}}}

\cmdtxtarg ... to do!
    • \cmdtxtarg{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAMEsupSUBEXT1(ARG)EXT2
      \txtargNewCmd*{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAMEsupSUBEXT1(ARG)EXT2
374 \newcommand{\cmdtxtarg}[1]
375   {\csdef{txtarg#1}%
376     {\@ifstar%
377       {\newtxtargsty*\csname txtsty#1\endcsname}}%
378     {\newtxtargsty{\csname txtsty#1\endcsname}}}}

\cmdtxttoarg ... to do!
    • \cmdtxttoarg{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtoargNewCmd{Name}[sub][sup][Arg] = NAMEsupSUB(ARG)
      \txtoargNewCmd*{Name}[sub][sup][Arg] = NAMEsupSUB(ARG)
379 \newcommand{\cmdtxttoarg}[1]
380   {\csdef{txtoarg#1}%
381     {\@ifstar%
382       {\newtxtoargsty*\csname txtsty#1\endcsname}}%
383     {\newtxtoargsty{\csname txtsty#1\endcsname}}}}

\cmdtxtpar ... to do!
    • \cmdtxtpar{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = NAMEsupSUBEXT1[PAR]EXT2
      \txtparNewCmd*{Name}[sub][sup][Ext1]{Par}[Ext2] = NAMEsupSUBEXT1[PAR]EXT2
384 \newcommand{\cmdtxtpar}[1]
385   {\csdef{txtpar#1}%
386     {\@ifstar%
387       {\newtxtparsty*\csname txtsty#1\endcsname}}%
388     {\newtxtparsty{\csname txtsty#1\endcsname}}}}

```

```

\cmdtxtopar ... to do!
    • \cmdtxtopar{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtoparNewCmd{Name}[sub][sup][Par] = NAMESUB[PAR]
      \txtoparNewCmd*{Name}[sub][sup][Par] = NAMESUB[PAR]

389 \newcommand{\cmdtxtopar}[1]
390   {\csdef{txtopar#1}%
391    {\@ifstar%
392     {\newtxtoparsty*{\csname txtsty#1\endcsname}}%
393     {\newtxtoparsty{\csname txtsty#1\endcsname}}}}

\cmdtxtall ... to do!
    • \cmdtxtall{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtNewCmd{Name}[sub][sup][Ext] = NAMESUBExt
      \txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAMESUBExt1(ARG)Ext2
      \txtoargNewCmd{Name}[sub][sup][Arg] = NAMESUB(ARG)
      \txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = NAMESUBExt1[PAR]Ext2
      \txtoparNewCmd{Name}[sub][sup][Par] = NAMESUB[PAR]

394 \newcommand{\cmdtxtall}[1]
395   {\cmdtxt{#1}\cmdtxtarg{#1}\cmdtxtoarg{#1}\cmdtxtpar{#1}\cmdtxtopar{#1}}

396 %%*****%

\usrtxt ... to do!
    • \usrtxt{cmdName}{Suf}{};
      \cmdNameSuf = cmdName
      \cmdNameSuf* = cmdName
      \usrtxt{cmdName}{Suf}{arg};
      \cmdNameSuf{Arg} = cmdName(Arg)
      \cmdNameSuf*{Arg} = cmdName(Arg)
      \usrtxt{cmdName}{Suf}{par};
      \cmdNameSuf{Par} = cmdName[Par]
      \cmdNameSuf*{Par} = cmdName[Par]

    • \usrtxt{cmdName}{Suf}{}[newName];
      \cmdNameSuf = newName
      \cmdNameSuf* = newName
      \usrtxt{cmdName}{Suf}{arg}[newName];
      \cmdNameSuf{Arg} = newName(Arg)
      \cmdNameSuf*{Arg} = newName(Arg)
      \usrtxt{cmdName}{Suf}{par}[newName];
      \cmdNameSuf{Par} = newName[Par]
      \cmdNameSuf*{Par} = newName[Par]

397 \newcommandx{\usrtxt}[4][4=]
398   {\csdef{#1#2}{%
399    \@ifstar%
400     {\csname txt#3\endcsname*\defval{#4}{#1}}%
401     {\csname txt#3\endcsname\defval{#4}{#1}}}}

402 %%*****%
403 %%*****%
404 %%** Math Meta Commands *****%
405 %%*****%

\newmth ... to do!
    • \newmth[mathrm]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth[mathsf]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth[mathtt]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth*[mathrm]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth*[mathsf]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth*[mathtt]{Name}[sub][sup][Ext] = "NamesupsubExt"

```

```

406 \newcommand{\newmth}
407   {\@ifstar{\@snewmth}{\@newmth}}
408 \newcommandx{\@newmth}[5][1=, 3=, 4=, 5=]
409   {\ensuremath{\csname#1\endcsname{#2}\mthsubsup{#3}{#4}{#5}}}
410 \newcommandx{\@snewmth}[5][1=, 3=, 4=, 5=]
411   {\ensuremath{\csname#1\endcsname #2\mthsubsup{#3}{#4}{#5}}}

```

\newmthsty ... to do!

- \newmthsty{\mathrm}{Name}[sub][sup][Ext] = “Name<sup>sup</sup><sub>sub</sub>Ext”
- \newmthsty{\mathsf}{Name}[sub][sup][Ext] = “Name<sup>sup</sup><sub>sub</sub>Ext”
- \newmthsty{\mathtt}{Name}[sub][sup][Ext] = “Name<sup>sup</sup><sub>sub</sub>Ext”
- \newmthsty\*{\mathrm}{Name}[sub][sup][Ext] = “Name<sup>sup</sup><sub>sub</sub>Ext”
- \newmthsty\*{\mathsf}{Name}[sub][sup][Ext] = “Name<sup>sup</sup><sub>sub</sub>Ext”
- \newmthsty\*{\mathtt}{Name}[sub][sup][Ext] = “Name<sup>sup</sup><sub>sub</sub>Ext”

```

412 \newcommand{\newmthsty}
413   {\@ifstar{\@snewmthsty}{\@newmthsty}}
414 \newcommandx{\@newmthsty}[2][2=]
415   {\newmth[\defval{#2}{#1}]}
416 \newcommandx{\@snewmthsty}[2][2=]
417   {\newmth*[\defval{#2}{#1}]}

```

\newmtharg ... to do!

- \newmtharg{\mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmtharg{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmtharg{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmtharg\*{\mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmtharg\*{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmtharg\*{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”

```

418 \newcommand{\newmtharg}
419   {\@ifstar{\@snewmtharg}{\@newmtharg}}
420 \newcommandx{\@newmtharg}[7][1=, 3=, 4=, 5=, 7=]
421   {\newmth{#1}{#2}{#3}{#4}[\argmid{#5}{\left}{\right)}\arglef{!}{#7}]}
422 \newcommandx{\@snewmtharg}[7][1=, 3=, 4=, 5=, 7=]
423   {\newmth{#1}{#2}{#3}{#4}[\argmid{#5}{#6}{#7}]}

```

\newmthargsty ... to do!

- \newmthargsty{\mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmthargsty{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmthargsty{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmthargsty\*{\mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmthargsty\*{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”
- \newmthargsty\*{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name<sup>sup</sup><sub>sub</sub>Ext1(Arg<sup>Ex<sup>Ex</sup></sup>)Ext2”

```

424 \newcommand{\newmthargsty}
425   {\@ifstar{\@snewmthargsty}{\@newmthargsty}}
426 \newcommandx{\@newmthargsty}[2][2=]
427   {\newmtharg[\defval{#2}{#1}]}
428 \newcommandx{\@snewmthargsty}[2][2=]
429   {\newmtharg*[\defval{#2}{#1}]}

```

\newmthoarg ... to do!

- \newmthoarg{\mathrm}{Name}[sub][sup][Arg^{Ex^{Ex}}] = “Name<sup>sup</sup><sub>sub</sub>(Arg<sup>Ex<sup>Ex</sup></sup>)”

- ```

430 \newcommand{\newmthoarg}
431   {\@ifstar{\@snewmthoarg}{\@newmthoarg}}
432 \newcommandx{\@newmthoarg}[5][1=, 3=, 4=, 5=]
433   {\newmtharg{#1}{#2}{#3}{#4}[]{\#5}[] }
434 \newcommandx{\@snewmthoarg}[5][1=, 3=, 4=, 5=]
435   {\newmtharg*{#1}{#2}{#3}{#4}[]{\#5}[] }

```

- `\newmthoargsty{\mathrm}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = “Name<sub>sub</sub><sup>sup</sup>(Arg<sup>Ex</sup>Ex)”
- `\newmthoargsty{\mathsf}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = “Name<sub>sub</sub><sup>sup</sup>(Arg<sup>Ex</sup>Ex)”
- `\newmthoargsty{\mathtt}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = “Name<sub>sub</sub><sup>sup</sup>(Arg<sup>Ex</sup>Ex)”
- `\newmthoargsty*{\mathrm}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = “Name<sub>sub</sub><sup>sup</sup>(Arg<sup>Ex</sup>Ex)”
- `\newmthoargsty*{\mathsf}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = “Name<sub>sub</sub><sup>sup</sup>(Arg<sup>Ex</sup>Ex)”
- `\newmthoargsty*{\mathtt}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = “Name<sub>sub</sub><sup>sup</sup>(Arg<sup>Ex</sup>Ex)”

- `\newmthpar[\mathrm]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = `"NamesupsubExt1[ParExEx]Ext2"`
- `\newmthpar[\mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = `"NamesupsubExt1[ParExEx]Ext2"`
- `\newmthpar[\mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = `"NamesupsubExt1[ParExEx]Ext2"`
- `\newmthpar*[\mathrm]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = `"NamesupsubExt1[ParExEx]Ext2"`
- `\newmthpar*[\mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = `"NamesupsubExt1[ParExEx]Ext2"`
- `\newmthpar*[\mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = `"NamesupsubExt1[ParExEx]Ext2"`

- `\newmthparsty{\mathrm}{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = “Name<sup>sup</sup><sub>sub</sub>Ext1[Par<sup>Ex</sup>Ex]Ext2”
- `\newmthparsty{\mathrm}[mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = “Name<sup>sup</sup><sub>sub</sub>Ext1[Par<sup>Ex</sup>Ex]Ext2”
- `\newmthparsty{\mathrm}[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = “Name<sup>sup</sup><sub>sub</sub>Ext1[Par<sup>Ex</sup>Ex]Ext2”
- `\newmthparsty*{\mathrm}{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = “Name<sup>sup</sup><sub>sub</sub>Ext1[Par<sup>Ex</sup>Ex]Ext2”
- `\newmthparsty*{\mathrm}[mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = “Name<sup>sup</sup><sub>sub</sub>Ext1[Par<sup>Ex</sup>Ex]Ext2”
- `\newmthparsty*{\mathrm}[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = “Name<sup>sup</sup><sub>sub</sub>Ext1[Par<sup>Ex</sup>Ex]Ext2”

```

448 \newcommand{\newmthparsty}
449   {\@ifstar{\@snewmthparsty}{\@newmthparsty}}
450 \newcommandx{\@newmthparsty}[2][2=]
451   {\newmthpar[\defval{#2}{#1}]}
452 \newcommandx{\@snewmthparsty}[2][2=]
453   {\newmthpar*[\defval{#2}{#1}]}

```

\newmthpar ... to do!

- $\newmthpar[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthpar[\mathsf]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthpar[\mathtt]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthpar*[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthpar*[\mathsf]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthpar*[\mathtt]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$

```

454 \newcommand{\newmthopar}
455   {\@ifstar{\@snewmthopar}{\@newmthopar}}
456 \newcommandx{\@newmthopar}[5][1=, 3=, 4=, 5=]
457   {\newmthpar{#1}{#2}{#3}{#4}[]\{#5}[]}
458 \newcommandx{\@snewmthopar}[5][1=, 3=, 4=, 5=]
459   {\newmthpar*{#1}{#2}{#3}{#4}[]\{#5}[]}

```

\newmthoparsty ... to do!

- $\newmthoparsty[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthoparsty[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthoparsty[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthoparsty*[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthoparsty*[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$
- $\newmthoparsty*[\mathrm]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Par}^{\mathrm{Ex}^{\mathrm{Ex}}}] = \text{"Name}_{sub}^{sup}[Par^{Ex^{Ex}}]"}$

```

460 \newcommand{\newmthoparsty}
461   {\@ifstar{\@snewmthoparsty}{\@newmthoparsty}}
462 \newcommandx{\@newmthoparsty}[2][2=]
463   {\newmthopar[\defval{#2}{#1}]}
464 \newcommandx{\@snewmthoparsty}[2][2=]
465   {\newmthopar*[\defval{#2}{#1}]}

```

\mthsubsup ... to do!

```

466 \newcommand{\mthsubsup}[2]
467   {\empchk{#1}{_}{#1}}\empchk{#2}{^}{#2}}
468 %%%

```

\mth ... to do!

- $\mth{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Ext}] = \text{"Name}_{sub}^{sup}Ext"$
- $\mth[\mathbf]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Ext}] = \text{"Name}_{sub}^{sup}Ext"$
- $\mth[\mathtt]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Ext}] = \text{"Name}_{sub}^{sup}Ext"$
- $\mth*{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Ext}] = \text{"Name}_{sub}^{sup}Ext"$
- $\mth*[\mathbf]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Ext}] = \text{"Name}_{sub}^{sup}Ext"$
- $\mth*[\mathtt]{Name}[\mathrm{sub}][\mathrm{sup}][\mathrm{Ext}] = \text{"Name}_{sub}^{sup}Ext"$

```

469 \newcommand{\mth}
470   {\@ifstar{\newmthsty{\mthsty}}{\newmthsty*\mthsty}}

```

\mtharg ... to do!





```

• \cmdmth{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
\mthNewCmd{Name}[sub][sup][Ext] = NamesupsubExt
\mthNewCmd*{Name}[sub][sup][Ext] = NamesupsubExt
482 \newcommand{\cmdmth}[1]
483 {\csdef{mth#1}%
484 {\@ifstar{\newmthsty*{mthsty#1}}{\newmthsty{mthsty#1}}}}

\cmdmtharg ... to do!
• \cmdmtharg{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
\mthargNewCmd{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupsubExt1(ArgExEx)Ext2
\mthargNewCmd*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupsubExt1(ArgExEx)Ext2
485 \newcommand{\cmdmtharg}[1]
486 {\csdef{mtharg#1}%
487 {\@ifstar{\newmthargsty*{mthsty#1}}{\newmthargsty{mthsty#1}}}}

\cmdmthoarg ... to do!
• \cmdmthoarg{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
\mthoargNewCmd{Name}[sub][sup][Arg^{Ex^{Ex}}] = Namesupsub(ArgExEx)
\mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}] = Namesupsub(ArgExEx)
488 \newcommand{\cmdmthoarg}[1]
489 {\csdef{mthoarg#1}%
490 {\@ifstar{\newmthoargsty*{mthsty#1}}{\newmthoargsty{mthsty#1}}}}

\cmdmthpar ... to do!
• \cmdmthpar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
\mthparNewCmd{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupsubExt1[ParExEx]Ext2
\mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupsubExt1[ParExEx]Ext2
491 \newcommand{\cmdmthpar}[1]
492 {\csdef{mthpar#1}%
493 {\@ifstar{\newmthparsty*{mthsty#1}}{\newmthparsty{mthsty#1}}}}

\cmdmthopar ... to do!
• \cmdmthopar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
\mthoparNewCmd{Name}[sub][sup][Par^{Ex^{Ex}}] = Namesupsub[ParExEx]
\mthoparNewCmd*{Name}[sub][sup][Par^{Ex^{Ex}}] = Namesupsub[ParExEx]
494 \newcommand{\cmdmthopar}[1]
495 {\csdef{mthopar#1}%
496 {\@ifstar{\newmthoparsty*{mthsty#1}}{\newmthoparsty{mthsty#1}}}}

\cmdmthall ... to do!
• \cmdmthall{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
\mthNewCmd{Name}[sub][sup][Ext] = NamesupsubExt
\mthargNewCmd{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupsubExt1(ArgExEx)Ext2
\mthargNewCmd*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupsubExt1(ArgExEx)Ext2
\mthoargNewCmd{Name}[sub][sup][Arg^{Ex^{Ex}}] = Namesupsub(ArgExEx)
\mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}] = Namesupsub(ArgExEx)
\mthparNewCmd{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupsubExt1[ParExEx]Ext2
\mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupsubExt1[ParExEx]Ext2
\mthoparNewCmd{Name}[sub][sup][Par^{Ex^{Ex}}] = Namesupsub[ParExEx]
\mthoparNewCmd*{Name}[sub][sup][Par^{Ex^{Ex}}] = Namesupsub[ParExEx]
497 \newcommand{\cmdmthall}[1]
498 {\cmdmth{#1}\cmdmtharg{#1}\cmdmthoarg{#1}\cmdmthpar{#1}\cmdmthopar{#1}}
499 %%*****%

```

\usrmth ... to do!

- \usrmth{cmdName}{Suf}{};  
\cmdNameSuf = *cmdName*  
\cmdNameSuf\* = *cmdName*  
\usrmth{cmdName}{Suf}{arg};  
\cmdNameSuf{Arg<sup>Ex</sup>{Ex}} = *cmdName*(*Arg*<sup>*Ex Ex*</sup>)  
\cmdNameSuf\*{Arg<sup>Ex</sup>{Ex}} = *cmdName*(*Arg*<sup>*Ex Ex*</sup>)  
\usrmth{cmdName}{Suf}{par};  
\cmdNameSuf{Par<sup>Ex</sup>{Ex}} = *cmdName*[*Par*<sup>*Ex Ex*</sup>]  
\cmdNameSuf\*{Par<sup>Ex</sup>{Ex}} = *cmdName*[*Par*<sup>*Ex Ex*</sup>]
- \usrmth{cmdName}{Suf}{}[newName];  
\cmdNameSuf = *newName*  
\cmdNameSuf\* = *newName*  
\usrmth{cmdName}{Suf}{arg}[newName];  
\cmdNameSuf{Arg<sup>Ex</sup>{Ex}} = *newName*(*Arg*<sup>*Ex Ex*</sup>)  
\cmdNameSuf\*{Arg<sup>Ex</sup>{Ex}} = *newName*(*Arg*<sup>*Ex Ex*</sup>)  
\usrmth{cmdName}{Suf}{par}[newName];  
\cmdNameSuf{Par<sup>Ex</sup>{Ex}} = *newName*[*Par*<sup>*Ex Ex*</sup>]  
\cmdNameSuf\*{Par<sup>Ex</sup>{Ex}} = *newName*[*Par*<sup>*Ex Ex*</sup>]

500 \newcommandx{\usrmth}[4][4=]

501 {\csdef{#1#2}{%

502 \@ifstar%

503 {\csname mth#3\endcsname\*{\defval{#4}{#1}}}%

504 {\csname mth#3\endcsname{\defval{#4}{#1}}}}%

505 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\usrmthlatlow ... to do!

506 \newcommandx{\usrmthlatlow}[4][4=]

507 {\usrmth{#1}{#2}{#3}[#4]\seqoflatlow{#1#2}{mth#3}}

\usrmthlatupp ... to do!

508 \newcommandx{\usrmthlatupp}[4][4=]

509 {\usrmth{#1}{#2}{#3}[#4]\seqoflatupp{#1#2}{mth#3}}

\usrmthlatlet ... to do!

510 \newcommandx{\usrmthlatlet}[4][4=]

511 {\usrmth{#1}{#2}{#3}[#4]\seqoflatlet{#1#2}{mth#3}}

\usrmthgrklow ... to do!

512 \newcommandx{\usrmthgrklow}[4][4=]

513 {\usrmth{#1}{#2}{#3}[#4]\seqofgrklow{#1#2}{mth#3}}

\usrmthgrkupp ... to do!

514 \newcommandx{\usrmthgrkupp}[4][4=]

515 {\usrmth{#1}{#2}{#3}[#4]\seqofgrkupp{#1#2}{mth#3}}

\usrmthgrklet ... to do!

516 \newcommandx{\usrmthgrklet}[4][4=]

517 {\usrmth{#1}{#2}{#3}[#4]\seqofgrklet{#1#2}{mth#3}}

\usrmthlow ... to do!

518 \newcommandx{\usrmthlow}[4][4=]

519 {\usrmth{#1}{#2}{#3}[#4]\seqoflow{#1#2}{mth#3}}

\usrmthupp ... to do!

520 \newcommandx{\usrmthupp}[4][4=]

521 {\usrmth{#1}{#2}{#3}[#4]\seqofupp{#1#2}{mth#3}}

```

\usrmthlet ... to do!
522 \newcommandx{\usrmthlet}[4][4=]
523   {\usrmth{#1}{#2}{#3}[#4]\seqoflet{#1#2}{mth#3}}

524 %*****
525 %*****
526 %** Text Macro Generators *****
527 %*****
528 \iftxtgen@

\txtdef, ... ... to do!
    • \txtdef{Name}[sub][sup][Ext] =  $Name_{sub}^{sup}Ext$ 
    • \txtargdef{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $Name_{sub}^{sup}Ext1(Arg)Ext2$ 
    • \txtpardef{Name}[sub][sup][Ext1]{Par}[Ext2] =  $Name_{sub}^{sup}Ext1[Par]Ext2$ 
529 %% Style for Definitions
530 \cmdtxtall{def}\newcommand{\txtstydef}{\normalfont\bfseries\em}

\cmdtxtdef ... to do!
    • \cmdtxtdef{cmdName};
      \cmdName[sub][sub][ext] =  $cmdName_{sub}^{sub}ext$ 
    • \cmdtxtdef{cmdName}[newName];
      \cmdName[sub][sub][ext] =  $newName_{sub}^{sub}ext$ 
531 \newcommandx{\cmdtxtdef}[2][2=]
532   {\usrtxt{#1}{-}{def}[#2]}

\cmdtxtargdef ... to do!
    • \cmdtxtargdef{cmdName};
      \cmdName[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub}ext1(arg)ext2$ 
    • \cmdtxtargdef{cmdName}[newName];
      \cmdName[sub][sub][ext1]{arg}[ext2] =  $newName_{sub}^{sub}ext1(arg)ext2$ 
533 \newcommandx{\cmdtxtargdef}[2][2=]
534   {\usrtxt{#1}{-}{argdef}[#2]}

\cmdtxtoargdef ... to do!
    • \cmdtxtoargdef{cmdName};
      \cmdName[sub][sub][arg] =  $cmdName_{sub}^{sub}(arg)$ 
    • \cmdtxtoargdef{cmdName}[newName];
      \cmdName[sub][sub][arg] =  $newName_{sub}^{sub}(arg)$ 
535 \newcommandx{\cmdtxtoargdef}[2][2=]
536   {\usrtxt{#1}{-}{oargdef}[#2]}

\cmdtxtpardef ... to do!
    • \cmdtxtpardef{cmdName};
      \cmdName[sub][sub][ext1]{par}[ext2] =  $cmdName_{sub}^{sub}ext1[par]ext2$ 
    • \cmdtxtpardef{cmdName}[newName];
      \cmdName[sub][sub][ext1]{par}[ext2] =  $newName_{sub}^{sub}ext1[par]ext2$ 
537 \newcommandx{\cmdtxtpardef}[2][2=]
538   {\usrtxt{#1}{-}{pardef}[#2]}

\cmdtxtopardef ... to do!
    • \cmdtxtopardef{cmdName};
      \cmdName[sub][sub][par] =  $cmdName_{sub}^{sub}[par]$ 
    • \cmdtxtopardef{cmdName}[newName];
      \cmdName[sub][sub][par] =  $newName_{sub}^{sub}[par]$ 
539 \newcommandx{\cmdtxtopardef}[2][2=]
540   {\usrtxt{#1}{-}{opardef}[#2]}

\txtabr, ... ... to do!

```

- $\text{\texttt{txtabr}}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext}] = \text{Name}_{\text{sub}}^{\text{sup}} \text{Ext}$
- $\text{\texttt{xtargabr}}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Arg}\}[\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}} \text{Ext1}(\text{Arg})\text{Ext2}$
- $\text{\texttt{xtparabr}}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}} \text{Ext1}[\text{Par}]\text{Ext2}$

541 %% Style for Abbreviations

542  $\text{\texttt{cmdtxtall}}\{\text{abr}\}\text{\texttt{newcommand}}\{\text{\texttt{txtstyabr}}\}\{\text{\texttt{em}}\}$

$\text{\texttt{cmdtxtabr}}$  ... to do!

- $\text{\texttt{cmdtxtabr}}\{\text{cmdName}\};$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{\text{sub}}^{\text{sub}} \text{ext}$
- $\text{\texttt{cmdtxtabr}}\{\text{cmdName}\}[\text{newName}];$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{ext}] = \text{newName}_{\text{sub}}^{\text{sub}} \text{ext}$

543  $\text{\texttt{newcommandx}}\{\text{\texttt{cmdtxtabr}}\}[2][2=]$

544  $\{\text{\texttt{usrtxt}}\{\#1\}\}\{\text{\texttt{abr}}\}[\#2]\}$

$\text{\texttt{cmdtxtargabr}}$  ... to do!

- $\text{\texttt{cmdtxtargabr}}\{\text{cmdName}\};$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}} \text{ext1}(\text{arg})\text{ext2}$
- $\text{\texttt{cmdtxtargabr}}\{\text{cmdName}\}[\text{newName}];$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{newName}_{\text{sub}}^{\text{sub}} \text{ext1}(\text{arg})\text{ext2}$

545  $\text{\texttt{newcommandx}}\{\text{\texttt{cmdtxtargabr}}\}[2][2=]$

546  $\{\text{\texttt{usrtxt}}\{\#1\}\}\{\text{\texttt{argabr}}\}[\#2]\}$

$\text{\texttt{cmdtxtoargabr}}$  ... to do!

- $\text{\texttt{cmdtxtoargabr}}\{\text{cmdName}\};$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{\text{sub}}^{\text{sub}}(\text{arg})$
- $\text{\texttt{cmdtxtoargabr}}\{\text{cmdName}\}[\text{newName}];$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{arg}] = \text{newName}_{\text{sub}}^{\text{sub}}(\text{arg})$

547  $\text{\texttt{newcommandx}}\{\text{\texttt{cmdtxtoargabr}}\}[2][2=]$

548  $\{\text{\texttt{usrtxt}}\{\#1\}\}\{\text{\texttt{oargabr}}\}[\#2]\}$

$\text{\texttt{cmdtxtparabr}}$  ... to do!

- $\text{\texttt{cmdtxtparabr}}\{\text{cmdName}\};$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}} \text{ext1}[\text{par}]\text{ext2}$
- $\text{\texttt{cmdtxtparabr}}\{\text{cmdName}\}[\text{newName}];$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{newName}_{\text{sub}}^{\text{sub}} \text{ext1}[\text{par}]\text{ext2}$

549  $\text{\texttt{newcommandx}}\{\text{\texttt{cmdtxtparabr}}\}[2][2=]$

550  $\{\text{\texttt{usrtxt}}\{\#1\}\}\{\text{\texttt{parabr}}\}[\#2]\}$

$\text{\texttt{cmdtxtoparabr}}$  ... to do!

- $\text{\texttt{cmdtxtoparabr}}\{\text{cmdName}\};$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{\text{sub}}^{\text{sub}}[\text{par}]$
- $\text{\texttt{cmdtxtoparabr}}\{\text{cmdName}\}[\text{newName}];$   
 $\text{\texttt{cmdName}}[\text{sub}][\text{sub}][\text{par}] = \text{newName}_{\text{sub}}^{\text{sub}}[\text{par}]$

551  $\text{\texttt{newcommandx}}\{\text{\texttt{cmdtxtoparabr}}\}[2][2=]$

552  $\{\text{\texttt{usrtxt}}\{\#1\}\}\{\text{\texttt{oparabr}}\}[\#2]\}$

553 %\*\*\*\*\*%

$\text{\texttt{txtname}}, \dots$  ... to do!

- $\text{\texttt{txtname}}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext}] = \text{NAME}_{\text{SUB}}^{\text{SUP}} \text{EXT}$
- $\text{\texttt{xtargname}}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Arg}\}[\text{Ext2}] = \text{NAME}_{\text{SUB}}^{\text{SUP}} \text{EXT1}(\text{ARG})\text{EXT2}$
- $\text{\texttt{xtparname}}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\}[\text{Ext2}] = \text{NAME}_{\text{SUB}}^{\text{SUP}} \text{EXT1}[\text{PAR}]\text{EXT2}$

554 %% Style for Names

555  $\text{\texttt{cmdtxtall}}\{\text{name}\}\text{\texttt{newcommand}}\{\text{\texttt{txtstyname}}\}\{\text{\texttt{normalfont}}\text{\texttt{mdseries}}\text{\texttt{scshape}}\text{\texttt{sffamily}}\}$

$\text{\texttt{cmdtxtname}}$  ... to do!

- `\cmdtxtname{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT}$
- `\cmdtxtname{cmdName}[newName];`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext}] = \text{NEWNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT}$

556 `\newcommandx{\cmdtxtname}[2][2=]`  
557 `{\usrtxt{\#1}\{\}\{name}\#2\}`

`\cmdtxtargname` ... to do!

- `\cmdtxtargname{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT1}(\text{ARG})\text{EXT2}$
- `\cmdtxtargname{cmdName}[newName];`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{NEWNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT1}(\text{ARG})\text{EXT2}$

558 `\newcommandx{\cmdtxtargname}[2][2=]`  
559 `{\usrtxt{\#1}\{\}\{argname}\#2\}`

`\cmdtxtoargname` ... to do!

- `\cmdtxtoargname{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{arg}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}(\text{ARG})$
- `\cmdtxtoargname{cmdName}[newName];`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{arg}] = \text{NEWNAME}_{\text{SUB}}^{\text{SUB}}(\text{ARG})$

560 `\newcommandx{\cmdtxtoargname}[2][2=]`  
561 `{\usrtxt{\#1}\{\}\{oargname}\#2\}`

`\cmdtxtparname` ... to do!

- `\cmdtxtparname{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT1}[\text{PAR}]\text{EXT2}$
- `\cmdtxtparname{cmdName}[newName];`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{NEWNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT1}[\text{PAR}]\text{EXT2}$

562 `\newcommandx{\cmdtxtparname}[2][2=]`  
563 `{\usrtxt{\#1}\{\}\{parname}\#2\}`

`\cmdtxtoparname` ... to do!

- `\cmdtxtoparname{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{par}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}[\text{PAR}]$
- `\cmdtxtoparname{cmdName}[newName];`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{par}] = \text{NEWNAME}_{\text{SUB}}^{\text{SUB}}[\text{PAR}]$

564 `\newcommandx{\cmdtxtoparname}[2][2=]`  
565 `{\usrtxt{\#1}\{\}\{oparname}\#2\}`

`\txtcom, ...` ... to do!

- `\txtcom{Name}[sub][sup][Ext] = NAME_{SUB}^{SUP}EXT`
- `\txtargcom{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAME_{SUB}^{SUP}EXT1(ARG)EXT2`
- `\txtparcom{Name}[sub][sup][Ext1]{Par}[Ext2] = NAME_{SUB}^{SUP}EXT1[PAR]EXT2`

566 `%% Style for Complexities`  
567 `\cmdtxtall{com}\newcommand{\txtstycom}{\normalfont\mdseries\scshape\rmfamily}`

`\cmdtxtcom` ... to do!

- `\cmdtxtcom{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT}$
- `\cmdtxtcom{cmdName}[newName];`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext}] = \text{NEWNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT}$

568 `\newcommandx{\cmdtxtcom}[2][2=]`  
569 `{\usrtxt{\#1}\{\}\{com}\#2\}`

`\cmdtxtargcom` ... to do!

- `\cmdtxtargcom{cmdName};`  
 $\text{cmdName}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{CMDNAME}_{\text{SUB}}^{\text{SUB}}\text{EXT1}(\text{ARG})\text{EXT2}$

```

    • \cmdtxtargcom{cmdName}[newName];
      \cmdName[sub][sub][ext1]{arg}[ext2] = NEWNAMESUBSUBEXT1(ARG)EXT2
570 \newcommandx{\cmdtxtargcom}[2][2=]
571   {\usrtxt{#1}{-}{argcom}[#2]}

\cmdtxtoargcom ... to do!
    • \cmdtxtoargcom{cmdName};
      \cmdName[sub][sub][arg] = CMDNAMESUBSUB(ARG)
    • \cmdtxtoargcom{cmdName}[newName];
      \cmdName[sub][sub][arg] = NEWNAMESUBSUB(ARG)
572 \newcommandx{\cmdtxtoargcom}[2][2=]
573   {\usrtxt{#1}{-}{oargcom}[#2]}

\cmdtxtparcom ... to do!
    • \cmdtxtparcom{cmdName};
      \cmdName[sub][sub][ext1]{par}[ext2] = CMDNAMESUBSUBEXT1[PAR]EXT2
    • \cmdtxtparcom{cmdName}[newName];
      \cmdName[sub][sub][ext1]{par}[ext2] = NEWNAMESUBSUBEXT1[PAR]EXT2
574 \newcommandx{\cmdtxtparcom}[2][2=]
575   {\usrtxt{#1}{-}{parcom}[#2]}

\cmdtxtoparcom ... to do!
    • \cmdtxtoparcom{cmdName};
      \cmdName[sub][sub][par] = CMDNAMESUBSUB[PAR]
    • \cmdtxtoparcom{cmdName}[newName];
      \cmdName[sub][sub][par] = NEWNAMESUBSUB[PAR]
576 \newcommandx{\cmdtxtoparcom}[2][2=]
577   {\usrtxt{#1}{-}{oparcom}[#2]}

578 \fi
579 %*****%
580 %*****%
581 %** Math Macro Generators *****%
582 %*****%
583 \ifmthgen@

\mthname, ... ... to do!
    • \mthname{NAME}[sub][sup][Ext] =  $\mathcal{NAME}_{sub}^{sup}Ext$ 
    • \mthargname{NAME}[sub][sup][Ext1]{ArgEx{Ex}}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$ 
    • \mthargname*(NAME)[sub][sup][Ext1]{ArgEx{Ex}}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$ 
    • \mthparname{NAME}[sub][sup][Ext1]{ParEx{Ex}}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$ 
    • \mthparname*(NAME)[sub][sup][Ext1]{ParEx{Ex}}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$ 
584 % Style for Names
585 \cmdmthall{name}\newcommand{\mthstname}{\mathcal}

\AName, ... ... to do!
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
586 \seqoflatupp{Name}{mthname}

\cmdmthname ... to do!
    • \cmdmthname{CMDNAME};
      \CMDNAMEName[sub][sub][ext] =  $CMDNAME_{sub}^{sub}ext$ 
    • \cmdmthname{cmdName}[NEWNAME];
      \cmdNameName[sub][sub][ext] =  $NEWNAME_{sub}^{sub}ext$ 
587 \newcommandx{\cmdmthname}[2][2=]
588   {\usrmth{#1}{Name}{name}[#2]}

```

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\cmdmthargname ... to do!
    • \cmdmthargname{CMDNAME};
      \CMDNAMEName[sub][sub][ext1]{arg}[ext2] =  $CMDNAME\mathcal{E}_{sub}^{sub}ext1(arg)ext2$ 
    • \cmdmthargname{cmdName}[NEWNAME];
      \cmdNameName[sub][sub][ext1]{arg}[ext2] =  $\mathcal{NEWNAME}\mathcal{E}_{sub}^{sub}ext1(arg)ext2$ 
589 \newcommandx{\cmdmthargname}[2][2=]
590   {\usrmth{#1}{Name}{argname}[#2]}

\cmdmthoargname ... to do!
    • \cmdmthoargname{CMDNAME};
      \CMDNAMEName[sub][sub][arg] =  $CMDNAME\mathcal{E}_{sub}^{sub}(arg)$ 
    • \cmdmthoargname{cmdName}[NEWNAME];
      \cmdNameName[sub][sub][arg] =  $\mathcal{NEWNAME}\mathcal{E}_{sub}^{sub}(arg)$ 
591 \newcommandx{\cmdmthoargname}[2][2=]
592   {\usrmth{#1}{Name}{oargname}[#2]}

\cmdmthparname ... to do!
    • \cmdmthparname{CMDNAME};
      \CMDNAMEName[sub][sub][ext1]{par}[ext2] =  $CMDNAME\mathcal{E}_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparname{cmdName}[NEWNAME];
      \cmdNameName[sub][sub][ext1]{par}[ext2] =  $\mathcal{NEWNAME}\mathcal{E}_{sub}^{sub}ext1[par]ext2$ 
593 \newcommandx{\cmdmthparname}[2][2=]
594   {\usrmth{#1}{Name}{parname}[#2]}

\cmdmthoparname ... to do!
    • \cmdmthoparname{CMDNAME};
      \CMDNAMEName[sub][sub][par] =  $CMDNAME\mathcal{E}_{sub}^{sub}[par]$ 
    • \cmdmthoparname{cmdName}[NEWNAME];
      \cmdNameName[sub][sub][par] =  $\mathcal{NEWNAME}\mathcal{E}_{sub}^{sub}[par]$ 
595 \newcommandx{\cmdmthoparname}[2][2=]
596   {\usrmth{#1}{Name}{oparname}[#2]}

\mthfam, ... ... to do!
    • \mthfam{NAME}[sub][sup][Ext] =  $\mathcal{NAME}\mathcal{E}_{sub}^{sup}Ext$ 
    • \mthargfam{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $\mathcal{NAME}\mathcal{E}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$ 
    • \mthargfam*{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $\mathcal{NAME}\mathcal{E}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$ 
    • \mthparfam{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $\mathcal{NAME}\mathcal{E}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$ 
    • \mthparfam*{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $\mathcal{NAME}\mathcal{E}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$ 
597 %% Style for Families
598 \cmdmthall{fam}\newcommand{\mthstyfam}{\mathscr}

\AFam, ... ... to do!
 $\mathcal{A}, \mathcal{B}, \mathcal{C}, \mathcal{D}, \mathcal{E}, \mathcal{F}, \mathcal{G}, \mathcal{H}, \mathcal{I}, \mathcal{J}, \mathcal{K}, \mathcal{L}, \mathcal{M}, \mathcal{N}, \mathcal{O}, \mathcal{P}, \mathcal{Q}, \mathcal{R}, \mathcal{S}, \mathcal{T}, \mathcal{U}, \mathcal{V}, \mathcal{W}, \mathcal{X}, \mathcal{Y}, \mathcal{Z}$ 
599 \seqoflatupp{Fam}{mthfam}

\cmdmthfam ... to do!
    • \cmdmthfam{CMDNAME};
      \CMDNAMEFam[sub][sub][ext] =  $CMDNAME\mathcal{E}_{sub}^{sub}ext$ 
    • \cmdmthfam{cmdName}[NEWNAME];
      \cmdNameFam[sub][sub][ext] =  $\mathcal{NEWNAME}\mathcal{E}_{sub}^{sub}ext$ 
600 \newcommandx{\cmdmthfam}[2][2=]
601   {\usrmth{#1}{Fam}{fam}[#2]}

\cmdmthargfam ... to do!

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- $\backslash\text{cmdmthargfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \mathcal{CMDNAME}^{\text{sub}}_{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$
- $\backslash\text{cmdmthargfam}\{\text{cmdName}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdNameFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \mathcal{NEWNAME}^{\text{sub}}_{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$

602  $\backslash\text{newcommandx}\{\text{cmdmthargfam}\}[2][2=]$   
603  $\{\backslash\text{usrmth}\{\#1\}\{\text{Fam}\}\{\text{argfam}\}[\#2]\}$

$\backslash\text{cmdmthoargfam}$  ... to do!

- $\backslash\text{cmdmthoargfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{arg}] = \mathcal{CMDNAME}^{\text{sub}}_{\text{sub}}(\text{arg})$
- $\backslash\text{cmdmthoargfam}\{\text{cmdFam}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdFamFam}[\text{sub}][\text{sub}][\text{arg}] = \mathcal{NEWNAME}^{\text{sub}}_{\text{sub}}(\text{arg})$

604  $\backslash\text{newcommandx}\{\text{cmdmthoargfam}\}[2][2=]$   
605  $\{\backslash\text{usrmth}\{\#1\}\{\text{Fam}\}\{\text{oargfam}\}[\#2]\}$

$\backslash\text{cmdmthparfam}$  ... to do!

- $\backslash\text{cmdmthparfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \mathcal{CMDNAME}^{\text{sub}}_{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$
- $\backslash\text{cmdmthparfam}\{\text{cmdName}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdNameFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \mathcal{NEWNAME}^{\text{sub}}_{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$

606  $\backslash\text{newcommandx}\{\text{cmdmthparfam}\}[2][2=]$   
607  $\{\backslash\text{usrmth}\{\#1\}\{\text{Fam}\}\{\text{parfam}\}[\#2]\}$

$\backslash\text{cmdmthoparfam}$  ... to do!

- $\backslash\text{cmdmthoparfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{par}] = \mathcal{CMDNAME}^{\text{sub}}_{\text{sub}}[\text{par}]$
- $\backslash\text{cmdmthoparfam}\{\text{cmdFam}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdFamFam}[\text{sub}][\text{sub}][\text{par}] = \mathcal{NEWNAME}^{\text{sub}}_{\text{sub}}[\text{par}]$

608  $\backslash\text{newcommandx}\{\text{cmdmthoparfam}\}[2][2=]$   
609  $\{\backslash\text{usrmth}\{\#1\}\{\text{Fam}\}\{\text{oparfam}\}[\#2]\}$

$\backslash\text{mthcls}, \dots$  ... to do!

- $\backslash\text{mthcls}\{\text{NAME}\}[\text{sub}][\text{sup}][\text{Ext}] = \mathcal{NAME}^{\text{sup}}_{\text{sub}}\text{Ext}$
- $\backslash\text{mthargcls}\{\text{NAME}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Arg}^{\text{Ex}}\{\text{Ex}\}\}[\text{Ext2}] = \mathcal{NAME}^{\text{sup}}_{\text{sub}}\text{Ext1}\left(\text{Arg}^{\text{Ex}^{\text{Ex}}}\right)\text{Ext2}$
- $\backslash\text{mthargcls}^*\{\text{NAME}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Arg}^{\text{Ex}}\{\text{Ex}\}\}[\text{Ext2}] = \mathcal{NAME}^{\text{sup}}_{\text{sub}}\text{Ext1}\left(\text{Arg}^{\text{Ex}^{\text{Ex}}}\right)\text{Ext2}$
- $\backslash\text{mthparcls}\{\text{NAME}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}^{\text{Ex}}\{\text{Ex}\}\}[\text{Ext2}] = \mathcal{NAME}^{\text{sup}}_{\text{sub}}\text{Ext1}\left[\text{Par}^{\text{Ex}^{\text{Ex}}}\right]\text{Ext2}$
- $\backslash\text{mthparcls}^*\{\text{NAME}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}^{\text{Ex}}\{\text{Ex}\}\}[\text{Ext2}] = \mathcal{NAME}^{\text{sup}}_{\text{sub}}\text{Ext1}\left[\text{Par}^{\text{Ex}^{\text{Ex}}}\right]\text{Ext2}$

610 %% Style for Classes  
611  $\backslash\text{cmdmthall}\{\text{cls}\}\backslash\text{newcommand}\{\text{mthstcls}\}\{\backslash\text{matheus}\}$

$\backslash\text{ACls}, \dots$  ... to do!

$\mathcal{A}, \mathcal{B}, \mathcal{C}, \mathcal{D}, \mathcal{E}, \mathcal{F}, \mathcal{G}, \mathcal{H}, \mathcal{I}, \mathcal{J}, \mathcal{K}, \mathcal{L}, \mathcal{M}, \mathcal{N}, \mathcal{O}, \mathcal{P}, \mathcal{Q}, \mathcal{R}, \mathcal{S}, \mathcal{T}, \mathcal{U}, \mathcal{V}, \mathcal{W}, \mathcal{X}, \mathcal{Y}, \mathcal{Z}$

612  $\backslash\text{seqoflatupp}\{\text{Cls}\}\{\text{mthcls}\}$

$\backslash\text{cmdmthcls}$  ... to do!

- $\backslash\text{cmdmthcls}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMECls}[\text{sub}][\text{sub}][\text{ext}] = \mathcal{CMDNAME}^{\text{sub}}_{\text{sub}}\text{ext}$
- $\backslash\text{cmdmthcls}\{\text{cmdName}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdNameCls}[\text{sub}][\text{sub}][\text{ext}] = \mathcal{NEWNAME}^{\text{sub}}_{\text{sub}}\text{ext}$

613  $\backslash\text{newcommandx}\{\text{cmdmthcls}\}[2][2=]$   
614  $\{\backslash\text{usrmth}\{\#1\}\{\text{Cls}\}\{\text{cls}\}[\#2]\}$

$\backslash\text{cmdmthargcls}$  ... to do!

- $\backslash\text{cmdmthargcls}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMECls}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \mathcal{CMDNAME}^{\text{sub}}_{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$



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    • \cmdmthargcls{cmdName}[NEWNAME];
      \cmdNameCls[sub][sub][ext1]{arg}[ext2] = \NEWNAME\mathcal{E}_{sub}^{sub}ext1(arg)ext2
615 \newcommandx{\cmdmthargcls}[2][2=]
616   {\usrmth{#1}{Cls}{argcls}[#2]}

\cmdmthoargcls ... to do!
    • \cmdmthoargcls{CMDNAME};
      \CMDNAMECls[sub][sub][arg] = \CMDNAME\mathcal{E}_{sub}^{sub}(arg)
    • \cmdmthoargcls{cmdCls}[NEWNAME];
      \cmdClsCls[sub][sub][arg] = \NEWNAME\mathcal{E}_{sub}^{sub}(arg)
617 \newcommandx{\cmdmthoargcls}[2][2=]
618   {\usrmth{#1}{Cls}{oargcls}[#2]}

\cmdmthparcls ... to do!
    • \cmdmthparcls{CMDNAME};
      \CMDNAMECls[sub][sub][ext1]{par}[ext2] = \CMDNAME\mathcal{E}_{sub}^{sub}ext1[par]ext2
    • \cmdmthparcls{cmdName}[NEWNAME];
      \cmdNameCls[sub][sub][ext1]{par}[ext2] = \NEWNAME\mathcal{E}_{sub}^{sub}ext1[par]ext2
619 \newcommandx{\cmdmthparcls}[2][2=]
620   {\usrmth{#1}{Cls}{parcls}[#2]}

\cmdmthoparcls ... to do!
    • \cmdmthoparcls{CMDNAME};
      \CMDNAMECls[sub][sub][par] = \CMDNAME\mathcal{E}_{sub}^{sub}[par]
    • \cmdmthoparcls{cmdCls}[NEWNAME];
      \cmdClsCls[sub][sub][par] = \NEWNAME\mathcal{E}_{sub}^{sub}[par]
621 \newcommandx{\cmdmthoparcls}[2][2=]
622   {\usrmth{#1}{Cls}{oparcls}[#2]}

\mthsig, ... ... to do!
    • \mthsig{Name}[sub][sup][Ext] = \mathcal{N}_{ame_{sub}}^{sup}Ext
    • \mthargsig{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = \mathcal{N}_{ame_{sub}}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2
    • \mthargsig*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = \mathcal{N}_{ame_{sub}}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2
    • \mthparsig{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = \mathcal{N}_{ame_{sub}}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2
    • \mthparsig*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = \mathcal{N}_{ame_{sub}}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2
623 %% Style for Signatures
624 \cmdmthall{sig}\newcommand{\mthstysig}{\mathpzc}

\asig, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
\mathcal{A}, \mathcal{B}, \mathcal{C}, \mathcal{D}, \mathcal{E}, \mathcal{F}, \mathcal{G}, \mathcal{H}, \mathcal{I}, \mathcal{J}, \mathcal{K}, \mathcal{L}, \mathcal{M}, \mathcal{N}, \mathcal{O}, \mathcal{P}, \mathcal{Q}, \mathcal{R}, \mathcal{S}, \mathcal{T}, \mathcal{U}, \mathcal{V}, \mathcal{W}, \mathcal{X}, \mathcal{Y}, \mathcal{Z}
\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \varkappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega
625 \seqoflatlet{Sig}{mthsig}\seqofgrklow{Sig}{mthsig}

\cmdmthsig ... to do!
    • \cmdmthsig{cmdName};
      \cmdNameSig[sub][sub][ext] = \cmd\mathcal{N}_{ame_{sub}}^{sub}ext
    • \cmdmthsig{cmdName}[NewName];
      \cmdNameSig[sub][sub][ext] = \New\mathcal{N}_{ame_{sub}}^{sub}ext
626 \newcommandx{\cmdmthsig}[2][2=]
627   {\usrmth{#1}{Sig}{sig}[#2]}

\cmdmthargsig ... to do!
    • \cmdmthargsig{cmdName};
      \cmdNameSig[sub][sub][ext1]{arg}[ext2] = \cmd\mathcal{N}_{ame_{sub}}^{sub}ext1(arg)ext2

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    • \cmdmthargsig{cmdName}[NewName];
      \cmdNameSig[sub][sub][ext1]{arg}[ext2] =  $\mathcal{New}\mathcal{Ame}_{sub}^{sub}ext1(arg)ext2$ 
628 \newcommandx{\cmdmthargsig}[2][2=]
629   {\usrmth{#1}{Sig}{argsig}[#2]}

\cmdmthoargsig ... to do!
    • \cmdmthoargsig{cmdName};
      \cmdNameSig[sub][sub][arg] =  $cmd\mathcal{Ame}_{sub}^{sub}(arg)$ 
    • \cmdmthoargsig{cmdSig}[NewName];
      \cmdSigSig[sub][sub][arg] =  $\mathcal{New}\mathcal{Ame}_{sub}^{sub}(arg)$ 
630 \newcommandx{\cmdmthoargsig}[2][2=]
631   {\usrmth{#1}{Sig}{oargsig}[#2]}

\cmdmthparsig ... to do!
    • \cmdmthparsig{cmdName};
      \cmdNameSig[sub][sub][ext1]{par}[ext2] =  $cmd\mathcal{Ame}_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparsig{cmdName}[NewName];
      \cmdNameSig[sub][sub][ext1]{par}[ext2] =  $\mathcal{New}\mathcal{Ame}_{sub}^{sub}ext1[par]ext2$ 
632 \newcommandx{\cmdmthparsig}[2][2=]
633   {\usrmth{#1}{Sig}{parsig}[#2]}

\cmdmthoparsig ... to do!
    • \cmdmthoparsig{cmdName};
      \cmdNameSig[sub][sub][par] =  $cmd\mathcal{Ame}_{sub}^{sub}[par]$ 
    • \cmdmthoparsig{cmdSig}[NewName];
      \cmdSigSig[sub][sub][par] =  $\mathcal{New}\mathcal{Ame}_{sub}^{sub}[par]$ 
634 \newcommandx{\cmdmthoparsig}[2][2=]
635   {\usrmth{#1}{Sig}{oparsig}[#2]}

\mthstr, ... ... to do!
    • \mthstr{Name}[sub][sup][Ext] =  $\mathcal{Name}_{sub}^{sup}Ext$ 
    • \mthargstr{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $\mathcal{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$ 
    • \mthargstr*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $\mathcal{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$ 
    • \mthparstr{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $\mathcal{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$ 
    • \mthparstr*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $\mathcal{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$ 
636 %% Style for Structures
637 \cmdmthall{str}\newcommand{\mthstyststr}{\mathfrak{str}}

\astr, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
α, β, γ, δ, ε, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϑ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
638 \seqoflatlet{Str}{mthstr}\seqofgrklow{Str}{mthstr}

\cmdmthstr ... to do!
    • \cmdmthstr{cmdName};
      \cmdNameStr[sub][sub][ext] =  $cmd\mathcal{Name}_{sub}^{sub}ext$ 
    • \cmdmthstr{cmdName}[NewName];
      \cmdNameStr[sub][sub][ext] =  $\mathcal{New}\mathcal{Name}_{sub}^{sub}ext$ 
639 \newcommandx{\cmdmthstr}[2][2=]
640   {\usrmth{#1}{Str}{str}[#2]}

\cmdmthargstr ... to do!
    • \cmdmthargstr{cmdName};
      \cmdNameStr[sub][sub][ext1]{arg}[ext2] =  $cmd\mathcal{Name}_{sub}^{sub}ext1(arg)ext2$ 

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        • \cmdmthargstr{cmdName}[NewName];
        \cmdNameStr[sub][sub][ext1]{arg}[ext2] = \newNamesubext1(arg)ext2
641 \newcommandx{\cmdmthargstr}[2][2=]
642   {\usrmth{#1}{Str}{argstr}[#2]}

\cmdmthoargstr ... to do!
        • \cmdmthoargstr{cmdName};
        \cmdNameStr[sub][sub][arg] = cmdNamesub(arg)
        • \cmdmthoargstr{cmdStr}[NewName];
        \cmdStrStr[sub][sub][arg] = \newNamesub(arg)
643 \newcommandx{\cmdmthoargstr}[2][2=]
644   {\usrmth{#1}{Str}{oargstr}[#2]}

\cmdmthparstr ... to do!
        • \cmdmthparstr{cmdName};
        \cmdNameStr[sub][sub][ext1]{par}[ext2] = cmdNamesubext1[par]ext2
        • \cmdmthparstr{cmdName}[NewName];
        \cmdNameStr[sub][sub][ext1]{par}[ext2] = \newNamesubext1[par]ext2
645 \newcommandx{\cmdmthparstr}[2][2=]
646   {\usrmth{#1}{Str}{parstr}[#2]}

\cmdmthoparstr ... to do!
        • \cmdmthoparstr{cmdName};
        \cmdNameStr[sub][sub][par] = cmdNamesub[par]
        • \cmdmthoparstr{cmdStr}[NewName];
        \cmdStrStr[sub][sub][par] = \newNamesub[par]
647 \newcommandx{\cmdmthoparstr}[2][2=]
648   {\usrmth{#1}{Str}{oparstr}[#2]}

\mthset, ... ... to do!
        • \mthset{Name}[sub][sup][Ext] = NamesupExt
        • \mthargset{Name}[sub][sup][Ext1]{ArgEx{ExEx}}[Ext2] = NamesupExt1(ArgExExt1Ex)Ext2
        • \mthargset*{Name}[sub][sup][Ext1]{ArgEx{ExEx}}[Ext2] = NamesupExt1(ArgExExt1Ex)Ext2
        • \mthparset{Name}[sub][sup][Ext1]{ParEx{ExEx}}[Ext2] = NamesupExt1[ParExExt1Ex]Ext2
        • \mthparset*{Name}[sub][sup][Ext1]{ParEx{ExEx}}[Ext2] = NamesupExt1[ParExExt1Ex]Ext2
649 %% Style for Sets
650 \cmdmthall{set}\newcommand{\mthstyset}{\mathrm}

\aset, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
α, β, γ, δ, ε, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϑ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, Υ, Φ, Φ, X, Ψ, Ω
651 \seqoflet{Set}{mthset}

\cmdmthset ... to do!
        • \cmdmthset{cmdName};
        \cmdNameSet[sub][sub][ext] = cmdNamesubext
        • \cmdmthset{cmdName}[NewName];
        \cmdNameSet[sub][sub][ext] = NewNamesubext
652 \newcommandx{\cmdmthset}[2][2=]
653   {\usrmth{#1}{Set}{set}[#2]}

\cmdmthargset ... to do!
        • \cmdmthargset{cmdName};
        \cmdNameSet[sub][sub][ext1]{arg}[ext2] = cmdNamesubext1(arg)ext2

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    • \cmdmthargset{cmdName}[NewName];
      \cmdNameSet[sub][sub][ext1]{arg}[ext2] =  $\text{NewName}_{sub}^{ext1}(arg)ext2$ 
654 \newcommandx{\cmdmthargset}[2][2=]
655   {\usrmth{#1}{Set}{argset}[#2]}

\cmdmthoargset ... to do!
    • \cmdmthoargset{cmdName};
      \cmdNameSet[sub][sub][arg] =  $\text{cmdName}_{sub}^{sub}(arg)$ 
    • \cmdmthoargset{cmdSet}[NewName];
      \cmdSetSet[sub][sub][arg] =  $\text{NewName}_{sub}^{sub}(arg)$ 
656 \newcommandx{\cmdmthoargset}[2][2=]
657   {\usrmth{#1}{Set}{oargset}[#2]}

\cmdmthparset ... to do!
    • \cmdmthparset{cmdName};
      \cmdNameSet[sub][sub][ext1]{par}[ext2] =  $\text{cmdName}_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparset{cmdName}[NewName];
      \cmdNameSet[sub][sub][ext1]{par}[ext2] =  $\text{NewName}_{sub}^{sub}ext1[par]ext2$ 
658 \newcommandx{\cmdmthparset}[2][2=]
659   {\usrmth{#1}{Set}{parset}[#2]}

\cmdmthoparset ... to do!
    • \cmdmthoparset{cmdName};
      \cmdNameSet[sub][sub][par] =  $\text{cmdName}_{sub}^{sub}[par]$ 
    • \cmdmthoparset{cmdSet}[NewName];
      \cmdSetSet[sub][sub][par] =  $\text{NewName}_{sub}^{sub}[par]$ 
660 \newcommandx{\cmdmthoparset}[2][2=]
661   {\usrmth{#1}{Set}{oparset}[#2]}

\cmdmthsetext ... to do!
662 \newcommandx{\cmdmthsetext}[3][2=, 3=]
663   {\cmdmthset{#1}[#2]\caselower[q]{#1}%
664   \usrmthlet{\thestring}{Sym}{sym}
665   [\defval{#3}{\defval{\empchk{#2}{\lowercase{#2}}}{\thestring}}}%
666   \usrmthlet{\thestring}{Elm}{elm}
667   [\defval{#3}{\defval{\empchk{#2}{\lowercase{#2}}}{\thestring}}]}

\mthrel, ... ... to do!
    • \mthrel{Name}[sub][sup][Ext] =  $\text{Name}_{sub}^{sup}Ext$ 
    • \mthargrel{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $\text{Name}_{sub}^{sup}Ext1\left(\text{Arg}^{Ex^{Ex}}\right)Ext2$ 
    • \mthargrel*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $\text{Name}_{sub}^{sup}Ext1\left(\text{Arg}^{Ex^{Ex}}\right)Ext2$ 
    • \mthparrel{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $\text{Name}_{sub}^{sup}Ext1\left[\text{Par}^{Ex^{Ex}}\right]Ext2$ 
    • \mthparrel*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $\text{Name}_{sub}^{sup}Ext1\left[\text{Par}^{Ex^{Ex}}\right]Ext2$ 
668 %% Style for Relations
669 \cmdmthall{rel}\newcommand{\mthstyrel}{\mathit}

\rel, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, L, T, U, V, W, X, Y, Z
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, \mathbb{E}, Z, H, \Theta, \mathbb{O}, I, K, \mathbb{K}, A, M, N, \Xi, O, \Pi, \mathbb{I}, P, \mathbb{P}, \Sigma, \mathbb{S}, T, \Upsilon, \Phi, \mathbb{F}, X, \Psi, \Omega$ 
670 \seqoflet{Rel}{mthrel}

\cmdmthrel ... to do!
    • \cmdmthrel{cmdName};
      \cmdNameRel[sub][sub][ext] =  $\text{cmdName}_{sub}^{sub}ext$ 

```

- $\backslash\text{cmdmthrel}\{\text{cmdName}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{ext}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext}$

```
671 \newcommandx{\cmdmthrel}[2][2=]
672 {\usrmth{\#1}\Rel}\rel{\#2}}
```

$\backslash\text{cmdmthargrel}$  ... to do!

- $\backslash\text{cmdmthargrel}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{ext1}][\text{arg}][\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$
- $\backslash\text{cmdmthargrel}\{\text{cmdName}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{ext1}][\text{arg}][\text{ext2}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$

```
673 \newcommandx{\cmdmthargrel}[2][2=]
674 {\usrmth{\#1}\Rel}\argrel{\#2}}
```

$\backslash\text{cmdmthoargrel}$  ... to do!

- $\backslash\text{cmdmthoargrel}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{\text{sub}}^{\text{sub}}(\text{arg})$
- $\backslash\text{cmdmthoargrel}\{\text{cmdRel}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdRelRel}[\text{sub}][\text{sub}][\text{arg}] = \text{NewName}_{\text{sub}}^{\text{sub}}(\text{arg})$

```
675 \newcommandx{\cmdmthoargrel}[2][2=]
676 {\usrmth{\#1}\Rel}\oargrel{\#2}}
```

$\backslash\text{cmdmthparrel}$  ... to do!

- $\backslash\text{cmdmthparrel}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{ext1}][\text{par}][\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$
- $\backslash\text{cmdmthparrel}\{\text{cmdName}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{ext1}][\text{par}][\text{ext2}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$

```
677 \newcommandx{\cmdmthparrel}[2][2=]
678 {\usrmth{\#1}\Rel}\parrel{\#2}}
```

$\backslash\text{cmdmthoparrel}$  ... to do!

- $\backslash\text{cmdmthoparrel}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameRel}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{\text{sub}}^{\text{sub}}[\text{par}]$
- $\backslash\text{cmdmthoparrel}\{\text{cmdRel}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdRelRel}[\text{sub}][\text{sub}][\text{par}] = \text{NewName}_{\text{sub}}^{\text{sub}}[\text{par}]$

```
679 \newcommandx{\cmdmthoparrel}[2][2=]
680 {\usrmth{\#1}\Rel}\oparrel{\#2}}
```

$\backslash\text{mthfun}, \dots$  ... to do!

- $\backslash\text{mthfun}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext}$
- $\backslash\text{mthargfun}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Arg}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}(\text{Arg}^{\text{Ex}}\{\text{Ex}\})\text{Ext2}$
- $\backslash\text{mthargfun}^*\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Arg}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}(\text{Arg}^{\text{Ex}}\{\text{Ex}\})\text{Ext2}$
- $\backslash\text{mthparfun}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Par}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}^{\text{Ex}}\{\text{Ex}\}]\text{Ext2}$
- $\backslash\text{mthparfun}^*\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Par}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}^{\text{Ex}}\{\text{Ex}\}]\text{Ext2}$

```
681 %% Style for Functions
682 \cmdmthall{\fun}\newcommand{\mthstyfun}\{\mathsf}
```

$\backslash\text{aFun}, \dots$  ... to do!

a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z  
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z  
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$   
A, B,  $\Gamma, \Delta, E, Z, H, \Theta, \varnothing, I, K, \Lambda, M, N, \Xi, O, \Pi, \text{II}, P, \Sigma, \text{Z}, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$

```
683 \seqoflet{\Fun}\mthfun}
```

$\backslash\text{cmdmthfun}$  ... to do!

- $\backslash\text{cmdmthfun}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameFun}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext}$

```

    • \cmdmthfun{cmdName}[NewName];
      \cmdNameFun[sub][sub][ext] = NewNamesubext
684 \newcommandx{\cmdmthfun}[2][2=]
685   {\usrmth{#1}{Fun}{fun}[#2]}

\cmdmthargfun ... to do!
    • \cmdmthargfun{cmdName};
      \cmdNameFun[sub][sub][ext1]{arg}[ext2] = cmdNamesubext1(arg)ext2
    • \cmdmthargfun{cmdName}[NewName];
      \cmdNameFun[sub][sub][ext1]{arg}[ext2] = NewNamesubext1(arg)ext2
686 \newcommandx{\cmdmthargfun}[2][2=]
687   {\usrmth{#1}{Fun}{argfun}[#2]}

\cmdmthoargfun ... to do!
    • \cmdmthoargfun{cmdName};
      \cmdNameFun[sub][sub][arg] = cmdNamesub(arg)
    • \cmdmthoargfun{cmdFun}[NewName];
      \cmdFunFun[sub][sub][arg] = NewNamesub(arg)
688 \newcommandx{\cmdmthoargfun}[2][2=]
689   {\usrmth{#1}{Fun}{oargfun}[#2]}

\cmdmthparfun ... to do!
    • \cmdmthparfun{cmdName};
      \cmdNameFun[sub][sub][ext1]{par}[ext2] = cmdNamesubext1[par]ext2
    • \cmdmthparfun{cmdName}[NewName];
      \cmdNameFun[sub][sub][ext1]{par}[ext2] = NewNamesubext1[par]ext2
690 \newcommandx{\cmdmthparfun}[2][2=]
691   {\usrmth{#1}{Fun}{parfun}[#2]}

\cmdmthoparfun ... to do!
    • \cmdmthoparfun{cmdName};
      \cmdNameFun[sub][sub][par] = cmdNamesub[par]
    • \cmdmthoparfun{cmdFun}[NewName];
      \cmdFunFun[sub][sub][par] = NewNamesub[par]
692 \newcommandx{\cmdmthoparfun}[2][2=]
693   {\usrmth{#1}{Fun}{oparfun}[#2]}

\mthsym, ... ... to do!
    • \mthsym{Name}[sub][sup][Ext] = NamesupsubExt
    • \mthargsym{Name}[sub][sup][Ext1]{ArgEx{Ex}}}[Ext2] = NamesupsubExt1(ArgExExt)ExExt2
    • \mthargsym*{Name}[sub][sup][Ext1]{ArgEx{Ex}}}[Ext2] = NamesupsubExt1(ArgExExt)ExExt2
    • \mthparsym{Name}[sub][sup][Ext1]{ParEx{Ex}}}[Ext2] = NamesupsubExt1[ParExExt]ExExt2
    • \mthparsym*{Name}[sub][sup][Ext1]{ParEx{Ex}}}[Ext2] = NamesupsubExt1[ParExExt]ExExt2
694 %% Style for Symbols
695 \cmdmthall{sym}\newcommand{\mthstysym}{\mathhtt}

\asym, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
α, β, γ, δ, ε, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϱ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
Α, Β, Γ, Δ, Ε, Ζ, Η, Θ, Ι, Κ, Λ, Μ, Ν, Ξ, Ο, Π, ΙΙ, Ρ, Σ, Τ, Υ, Φ, Ψ, Ω
696 \seqoflet{Sym}{mthsym}

\cmdmthsym ... to do!
    • \cmdmthsym{cmdName};
      \cmdNameSym[sub][sub][ext] = cmdNamesubext

```

- $\backslash\text{cmdmthsym}\{\text{cmdName}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext}$

```
697 \newcommandx{\cmdmthsym}[2][2=]
698 {\usrmth{\#1}\Sym}\{sym}\{#2}}
```

$\backslash\text{cmdmthargsym}$  ... to do!

- $\backslash\text{cmdmthargsym}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext1}][\text{arg}][\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$
- $\backslash\text{cmdmthargsym}\{\text{cmdName}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext1}][\text{arg}][\text{ext2}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$

```
699 \newcommandx{\cmdmthargsym}[2][2=]
700 {\usrmth{\#1}\Sym}\{argsym}\{#2}}
```

$\backslash\text{cmdmthoargsym}$  ... to do!

- $\backslash\text{cmdmthoargsym}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{\text{sub}}^{\text{sub}}(\text{arg})$
- $\backslash\text{cmdmthoargsym}\{\text{cmdSym}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdSymSym}[\text{sub}][\text{sub}][\text{arg}] = \text{NewName}_{\text{sub}}^{\text{sub}}(\text{arg})$

```
701 \newcommandx{\cmdmthoargsym}[2][2=]
702 {\usrmth{\#1}\Sym}\{oargsym}\{#2}}
```

$\backslash\text{cmdmthparsym}$  ... to do!

- $\backslash\text{cmdmthparsym}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext1}][\text{par}][\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$
- $\backslash\text{cmdmthparsym}\{\text{cmdName}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext1}][\text{par}][\text{ext2}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$

```
703 \newcommandx{\cmdmthparsym}[2][2=]
704 {\usrmth{\#1}\Sym}\{parsym}\{#2}}
```

$\backslash\text{cmdmthoparsym}$  ... to do!

- $\backslash\text{cmdmthoparsym}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameSym}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{\text{sub}}^{\text{sub}}[\text{par}]$
- $\backslash\text{cmdmthoparsym}\{\text{cmdSym}\}[\text{NewName}]$ ;  
 $\backslash\text{cmdSymSym}[\text{sub}][\text{sub}][\text{par}] = \text{NewName}_{\text{sub}}^{\text{sub}}[\text{par}]$

```
705 \newcommandx{\cmdmthoparsym}[2][2=]
706 {\usrmth{\#1}\Sym}\{oparsym}\{#2}}
```

$\backslash\text{mthelm}$ , ... ... to do!

- $\backslash\text{mthelm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext}$
- $\backslash\text{mthargelm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Arg}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}\left(\text{Arg}^{\text{Ex}}\{\text{Ex}\}\right)\text{Ext2}$
- $\backslash\text{mthargelm}*\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Arg}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}\left(\text{Arg}^{\text{Ex}}\{\text{Ex}\}\right)\text{Ext2}$
- $\backslash\text{mthparelm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Par}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}\left[\text{Par}^{\text{Ex}}\{\text{Ex}\}\right]\text{Ext2}$
- $\backslash\text{mthparelm}*\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}][\text{Par}^{\text{Ex}}\{\text{Ex}\}][\text{Ext2}] = \text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}\left[\text{Par}^{\text{Ex}}\{\text{Ex}\}\right]\text{Ext2}$

```
707 %% Style for Elements
708 \cmdmthall{elm}\newcommand{\mthstyelm}\{\mathnormal}
```

$\backslash\text{aElm}$ , ... ... to do!

$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z$   
 $A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z$   
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$   
 $A, B, \Gamma, \Delta, E, E, Z, H, \Theta, \Theta, I, K, K, A, M, N, \Xi, O, \Pi, \Pi, P, P, \Sigma, \Sigma, T, \Upsilon, \Phi, \Phi, X, \Psi, \Omega$

```
709 \seqoflet{Elm}\{mthelm}
```

$\backslash\text{cmdmthelm}$  ... to do!

- $\backslash\text{cmdmthelm}\{\text{cmdName}\}$ ;  
 $\backslash\text{cmdNameElm}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext}$

- \cmdmthelm{cmdName}[NewName];  
\cmdNameElm[sub][sub][ext] =  $NewName_{sub}^{sub}ext$

```

710 \newcommandx{\cmdmthelm}[2][2=]
711   {\usrmth{#1}{Elm}{elm}[#2]}

```

\cmdmthargelm ... to do!

- \cmdmthargelm{cmdName};  
\cmdNameElm[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub}ext1(arg)ext2$
- \cmdmthargelm{cmdName}[NewName];  
\cmdNameElm[sub][sub][ext1]{arg}[ext2] =  $NewName_{sub}^{sub}ext1(arg)ext2$

```

712 \newcommandx{\cmdmthargelm}[2][2=]
713   {\usrmth{#1}{Elm}{argelm}[#2]}

```

\cmdmthoargelm ... to do!

- \cmdmthoargelm{cmdName};  
\cmdNameElm[sub][sub][arg] =  $cmdName_{sub}^{sub}(arg)$
- \cmdmthoargelm{cmdElm}[NewName];  
\cmdElmElm[sub][sub][arg] =  $NewName_{sub}^{sub}(arg)$

```

714 \newcommandx{\cmdmthoargelm}[2][2=]
715   {\usrmth{#1}{Elm}{oargelm}[#2]}

```

\cmdmthparelm ... to do!

- \cmdmthparelm{cmdName};  
\cmdNameElm[sub][sub][ext1]{par}[ext2] =  $cmdName_{sub}^{sub}ext1[par]ext2$
- \cmdmthparelm{cmdName}[NewName];  
\cmdNameElm[sub][sub][ext1]{par}[ext2] =  $NewName_{sub}^{sub}ext1[par]ext2$

```

716 \newcommandx{\cmdmthparelm}[2][2=]
717   {\usrmth{#1}{Elm}{parelm}[#2]}

```

\cmdmthoparelm ... to do!

- \cmdmthoparelm{cmdName};  
\cmdNameElm[sub][sub][par] =  $cmdName_{sub}^{sub}[par]$
- \cmdmthoparelm{cmdElm}[NewName];  
\cmdElmElm[sub][sub][par] =  $NewName_{sub}^{sub}[par]$

```

718 \newcommandx{\cmdmthoparelm}[2][2=]
719   {\usrmth{#1}{Elm}{oparelm}[#2]}

```

```

720 %%*****%

```

\cmdmthsymelm ... to do!

- \cmdmthsymelm{cmdName};  
\cmdNameSym[sub][sub][ext] =  $cmdName_{sub}^{sub}ext$   
\cmdNameElm[sub][sub][ext] =  $cmdName_{sub}^{sub}ext$
- \cmdmthsymelm{cmdName}[NewName];  
\cmdNameSym[sub][sub][ext] =  $NewName_{sub}^{sub}ext$   
\cmdNameElm[sub][sub][ext] =  $NewName_{sub}^{sub}ext$

```

721 \newcommandx{\cmdmthsymelm}[2][2=]
722   {\cmdmthsym{#1}[#2]}%
723   \cmdmthelm{#1}[#2]}

```

\cmdmthargsymelm ... to do!

- \cmdmthargsymelm{cmdName};  
\cmdNameSym[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub}ext1(arg)ext2$   
\cmdNameElm[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub}ext1(arg)ext2$
- \cmdmthargsymelm{cmdName}[NewName];  
\cmdNameSym[sub][sub][ext1]{arg}[ext2] =  $NewName_{sub}^{sub}ext1(arg)ext2$   
\cmdNameElm[sub][sub][ext1]{arg}[ext2] =  $NewName_{sub}^{sub}ext1(arg)ext2$



```

724 \newcommandx{\cmdmthargsymelm}[2][2=]
725   {\cmdmthargsym{#1}[#2]%
726   \cmdmthargelm{#1}[#2]}

```

\cmdmthoargsymelm ... to do!

- \cmdmthoargsymelm{cmdName};  
 $\text{cmdNameSym}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{\text{sub}}^{\text{sub}}(\text{arg})$   
 $\text{cmdNameElm}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{\text{sub}}^{\text{sub}}(\text{arg})$
- \cmdmthoargsymelm{cmdName}[NewName];  
 $\text{cmdNameSym}[\text{sub}][\text{sub}][\text{arg}] = \text{NewName}_{\text{sub}}^{\text{sub}}(\text{arg})$   
 $\text{cmdNameElm}[\text{sub}][\text{sub}][\text{arg}] = \text{NewName}_{\text{sub}}^{\text{sub}}(\text{arg})$

```

727 \newcommandx{\cmdmthoargsymelm}[2][2=]
728   {\cmdmthoargsym{#1}[#2]%
729   \cmdmthoargelm{#1}[#2]}

```

\cmdmthparsymelm ... to do!

- \cmdmthparsymelm{cmdName};  
 $\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$   
 $\text{cmdNameElm}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$
- \cmdmthparsymelm{cmdName}[NewName];  
 $\text{cmdNameSym}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$   
 $\text{cmdNameElm}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$

```

730 \newcommandx{\cmdmthparsymelm}[2][2=]
731   {\cmdmthparsym{#1}[#2]%
732   \cmdmthparelm{#1}[#2]}

```

\cmdmthoparsymelm ... to do!

- \cmdmthoparsymelm{cmdName};  
 $\text{cmdNameSym}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{\text{sub}}^{\text{sub}}[\text{par}]$   
 $\text{cmdNameElm}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{\text{sub}}^{\text{sub}}[\text{par}]$
- \cmdmthoparsymelm{cmdName}[NewName];  
 $\text{cmdNameSym}[\text{sub}][\text{sub}][\text{par}] = \text{NewName}_{\text{sub}}^{\text{sub}}[\text{par}]$   
 $\text{cmdNameElm}[\text{sub}][\text{sub}][\text{par}] = \text{NewName}_{\text{sub}}^{\text{sub}}[\text{par}]$

```

733 \newcommandx{\cmdmthoparsymelm}[2][2=]
734   {\cmdmthoparsym{#1}[#2]%
735   \cmdmthoparelm{#1}[#2]}

```

```

736 %%*****%

```

\mthluop, ... ... to do!

- \mthluop{\oplus}[\text{sub}][\text{sup}][\text{Ext}] =  $\oplus_{\text{sub}}^{\text{sup}} \text{Ext}$
- \mthlbop{\oplus}[\text{sub}][\text{sup}][\text{Ext}] =  $\oplus_{\text{sub}}^{\text{sup}} \text{Ext}$

```

737 %% Style for \LaTeX Operators

```

```

738 \cmdmth{luop}\newcommand{\mthstyluop}[1]{\textstyle\mathop{#1}}
739 \cmdmth{lbop}\newcommand{\mthstylbop}[1]{\textstyle\mathbin{#1}}

```

\cmdmthluop, ... ... to do!

- \cmdmthluop{cmdName};  
 $\text{cmdNameUOp}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{\text{sub}}^{\text{sub}} \text{ext}$
- \cmdmthluop{cmdName}[\oplus];  
 $\text{cmdNameUOp}[\text{sub}][\text{sub}][\text{ext}] = \oplus_{\text{sub}}^{\text{sub}} \text{ext}$
- \cmdmthlbop{cmdName};  
 $\text{cmdNameBOp}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{\text{sub}}^{\text{sub}} \text{ext}$
- \cmdmthlbop{cmdName}[\oplus];  
 $\text{cmdNameBOp}[\text{sub}][\text{sub}][\text{ext}] = \oplus_{\text{sub}}^{\text{sub}} \text{ext}$

```

740 \newcommandx{\cmdmthluop}[2][2=]
741   {\usrmth{#1}\UOp}\luop}[#2]}
742 \newcommandx{\cmdmthlbop}[2][2=]
743   {\usrmth{#1}\BOp}\lbop}[#2]}

```

```

\mthlrel ... to do!
    • \mthlrel{\preceq}[sub][sup][Ext] =  $\preceq_{sub}^{sup} Ext$ 
744 %% Style for \LaTeX Relations
745 \cmdmth{lrel}\newcommand{\mthstylrel}{\mathrel}

\cmdmthlrel ... to do!
    • \cmdmthlrel{cmdName};
      \cmdNameRel[sub][sub][ext] =  $cmdName_{sub}^{sub} ext$ 
    • \cmdmthlrel{cmdName}[\preceq];
      \cmdNameRel[sub][sub][ext] =  $\preceq_{sub}^{sub} ext$ 
746 \newcommandx{\cmdmthlrel}[2][2=]
747 {\usrmth{#1}{Rel}{lrel}{#2}}

748 %%%

\mthsnt, ... to do!
    • \mthsnt{Name}[sub][sup][Ext] =  $Name_{sub}^{sup} Ext$ 
    • \mthargsnt{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $Name_{sub}^{sup} Ext1 \left( Arg^{Ex^{Ex}} \right) Ext2$ 
    • \mthargsnt*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] =  $Name_{sub}^{sup} Ext1 (Arg^{Ex^{Ex}}) Ext2$ 
    • \mthparsnt{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $Name_{sub}^{sup} Ext1 \left[ Par^{Ex^{Ex}} \right] Ext2$ 
    • \mthparsnt*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] =  $Name_{sub}^{sup} Ext1 [Par^{Ex^{Ex}}] Ext2$ 
749 %% Style for Sentences
750 \cmdmthall{snt}\newcommand{\mthstysnt}{\mathsf}

\aSnt, ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, \Xi, Z, H, \Theta, \varnothing, I, K, \Lambda, M, N, \Xi, O, \Pi, \text{II}, P, \Sigma, \varSigma, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$ 
751 \seqoflet{Snt}{mthsnt}

\cmdmthsnt ... to do!
    • \cmdmthsnt{cmdName};
      \cmdNameSnt[sub][sub][ext] =  $cmdName_{sub}^{sub} ext$ 
    • \cmdmthsnt{cmdName}[NewName];
      \cmdNameSnt[sub][sub][ext] =  $NewName_{sub}^{sub} ext$ 
752 \newcommandx{\cmdmthsnt}[2][2=]
753 {\usrmth{#1}{Snt}{snt}{#2}}

\cmdmthargsnt ... to do!
    • \cmdmthargsnt{cmdName};
      \cmdNameSnt[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub} ext1(arg) ext2$ 
    • \cmdmthargsnt{cmdName}[NewName];
      \cmdNameSnt[sub][sub][ext1]{arg}[ext2] =  $NewName_{sub}^{sub} ext1(arg) ext2$ 
754 \newcommandx{\cmdmthargsnt}[2][2=]
755 {\usrmth{#1}{Snt}{argsnt}{#2}}

\cmdmthoargsnt ... to do!
    • \cmdmthoargsnt{cmdName};
      \cmdNameSnt[sub][sub][arg] =  $cmdName_{sub}^{sub}(arg)$ 
    • \cmdmthoargsnt{cmdName}[NewName];
      \cmdNameSnt[sub][sub][arg] =  $NewName_{sub}^{sub}(arg)$ 
756 \newcommandx{\cmdmthoargsnt}[2][2=]
757 {\usrmth{#1}{Snt}{oargsnt}{#2}}

\cmdmthparsnt ... to do!

```

- $\backslash\text{cmdmthparsnt}\{\text{cmdName}\};$   
 $\backslash\text{cmdNameSnt}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{cmdName}_{sub}^{sub}ext1[\text{par}]ext2$
- $\backslash\text{cmdmthparsnt}\{\text{cmdName}\}[\text{NewName}];$   
 $\backslash\text{cmdNameSnt}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{NewName}_{sub}^{sub}ext1[\text{par}]ext2$

758  $\backslash\text{newcommandx}\{\text{cmdmthparsnt}\}[2][2=]$   
759  $\{\backslash\text{usrmth}\{\#1\}\{\text{Snt}\}\{\text{parsnt}\}\{\#2\}\}$

$\backslash\text{cmdmthoparsnt}$  ... to do!

- $\backslash\text{cmdmthoparsnt}\{\text{cmdName}\};$   
 $\backslash\text{cmdNameSnt}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{sub}^{sub}[\text{par}]$
- $\backslash\text{cmdmthoparsnt}\{\text{cmdName}\}[\text{NewName}];$   
 $\backslash\text{cmdNameSnt}[\text{sub}][\text{sub}][\text{par}] = \text{NewName}_{sub}^{sub}[\text{par}]$

760  $\backslash\text{newcommandx}\{\text{cmdmthoparsnt}\}[2][2=]$   
761  $\{\backslash\text{usrmth}\{\#1\}\{\text{Snt}\}\{\text{oparsnt}\}\{\#2\}\}$

$\backslash\text{mthfrm}$ , ... to do!

- $\backslash\text{mthfrm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext}] = \text{Name}_{sub}^{sup}Ext$
- $\backslash\text{mthargfrm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Arg}\wedge\{\text{Ex}\wedge\{\text{Ex}\}\}\}[\text{Ext2}] = \text{Name}_{sub}^{sup}Ext1(\text{Arg}^{Ex^{Ex}})Ext2$
- $\backslash\text{mthargfrm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Arg}\wedge\{\text{Ex}\wedge\{\text{Ex}\}\}\}[\text{Ext2}] = \text{Name}_{sub}^{sup}Ext1(\text{Arg}^{Ex^{Ex}})Ext2$
- $\backslash\text{mthparfrm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\wedge\{\text{Ex}\wedge\{\text{Ex}\}\}\}[\text{Ext2}] = \text{Name}_{sub}^{sup}Ext1[\text{Par}^{Ex^{Ex}}]Ext2$
- $\backslash\text{mthparfrm}\{\text{Name}\}[\text{sub}][\text{sup}][\text{Ext1}]\{\text{Par}\wedge\{\text{Ex}\wedge\{\text{Ex}\}\}\}[\text{Ext2}] = \text{Name}_{sub}^{sup}Ext1[\text{Par}^{Ex^{Ex}}]Ext2$

762 %% Style for Formulae  
763  $\backslash\text{cmdmthall}\{\text{frm}\}\backslash\text{newcommand}\{\text{mthstyfrm}\}\{\backslash\text{mathit}\}$

$\backslash\text{aFrm}$ , ... to do!

$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z$   
 $A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z$   
 $\alpha, \beta, \gamma, \delta, \epsilon, \varepsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \varkappa, \lambda, \mu, \nu, \xi, o, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, v, \phi, \varphi, \chi, \psi, \omega$   
 $A, B, \Gamma, \Delta, E, E, Z, H, \Theta, \Theta, I, K, K, A, M, N, \Xi, O, \Pi, \Pi, P, P, \Sigma, \Sigma, T, \Upsilon, \Phi, \Phi, X, \Psi, \Omega$

764  $\backslash\text{seqoflet}\{\text{Frm}\}\{\text{mthfrm}\}$

$\backslash\text{cmdmthfrm}$  ... to do!

- $\backslash\text{cmdmthfrm}\{\text{cmdName}\};$   
 $\backslash\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{sub}^{sub}ext$
- $\backslash\text{cmdmthfrm}\{\text{cmdName}\}[\text{NewName}];$   
 $\backslash\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{ext}] = \text{NewName}_{sub}^{sub}ext$

765  $\backslash\text{newcommandx}\{\text{cmdmthfrm}\}[2][2=]$   
766  $\{\backslash\text{usrmth}\{\#1\}\{\text{Frm}\}\{\text{frm}\}\{\#2\}\}$

$\backslash\text{cmdmthargfrm}$  ... to do!

- $\backslash\text{cmdmthargfrm}\{\text{cmdName}\};$   
 $\backslash\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{cmdName}_{sub}^{sub}ext1(\text{arg})ext2$
- $\backslash\text{cmdmthargfrm}\{\text{cmdName}\}[\text{NewName}];$   
 $\backslash\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{NewName}_{sub}^{sub}ext1(\text{arg})ext2$

767  $\backslash\text{newcommandx}\{\text{cmdmthargfrm}\}[2][2=]$   
768  $\{\backslash\text{usrmth}\{\#1\}\{\text{Frm}\}\{\text{argfrm}\}\{\#2\}\}$

$\backslash\text{cmdmthoargfrm}$  ... to do!

- $\backslash\text{cmdmthoargfrm}\{\text{cmdName}\};$   
 $\backslash\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{sub}^{sub}(\text{arg})$
- $\backslash\text{cmdmthoargfrm}\{\text{cmdName}\}[\text{NewName}];$   
 $\backslash\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{arg}] = \text{NewName}_{sub}^{sub}(\text{arg})$

769  $\backslash\text{newcommandx}\{\text{cmdmthoargfrm}\}[2][2=]$   
770  $\{\backslash\text{usrmth}\{\#1\}\{\text{Frm}\}\{\text{oargfrm}\}\{\#2\}\}$

$\backslash\text{cmdmthparfrm}$  ... to do!

- `\cmdmthparfrm{cmdName};`  
 $\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{cmdName}_{sub}^{sub} \text{ext1}[\text{par}]\text{ext2}$
- `\cmdmthparfrm{cmdName}[NewName];`  
 $\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \text{NewName}_{sub}^{sub} \text{ext1}[\text{par}]\text{ext2}$

```

771 \newcommandx{\cmdmthparfrm}[2][2=]
772   {\usrmth{\#1}\Frm}\{parfrm}\{#2}\}

\cmdmthoparfrm ... to do!


- \cmdmthoparfrm{cmdName};  

 $\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{par}] = \text{cmdName}_{sub}^{sub}[\text{par}]$
- \cmdmthoparfrm{cmdName}[NewName];  

 $\text{cmdNameFrm}[\text{sub}][\text{sub}][\text{par}] = \text{NewName}_{sub}^{sub}[\text{par}]$


773 \newcommandx{\cmdmthoparfrm}[2][2=]
774   {\usrmth{\#1}\Frm}\{oparfrm}\{#2}\}

775 %%*****%

```

```

\mthmat, ... ... to do!


- \mthmat{Name}[sub][sup][Ext] = Name_{sub}^{sup}Ext
- \mthargmat{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = Name_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2
- \mthargmat*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = Name_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2
- \mthparmat{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = Name_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2
- \mthparmat*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = Name_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2


776 %% Style for Matrices
777 \cmdmthall{mat}\newcommand{\mthstymat}[1]{\boldsymbol{\mathsf{\#1}}}

```

```

\Mat, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
α, β, γ, δ, ε, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϑ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, T, Φ, Φ, X, Ψ, Ω

778 \seqoflet{Mat}{mthmat}

```

```

\cmdmthmat ... to do!


- \cmdmthmat{cmdName};  

 $\text{cmdNameMat}[\text{sub}][\text{sub}][\text{ext}] = \text{cmdName}_{sub}^{sub} \text{ext}$
- \cmdmthmat{cmdName}[NewName];  

 $\text{cmdNameMat}[\text{sub}][\text{sub}][\text{ext}] = \text{NewName}_{sub}^{sub} \text{ext}$


779 \newcommandx{\cmdmthmat}[2][2=]
780   {\usrmth{\#1}\Mat}\{mat}\{#2}\}

```

```

\cmdmthargmat ... to do!


- \cmdmthargmat{cmdName};  

 $\text{cmdNameMat}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{cmdName}_{sub}^{sub} \text{ext1}(\text{arg})\text{ext2}$
- \cmdmthargmat{cmdName}[NewName];  

 $\text{cmdNameMat}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \text{NewName}_{sub}^{sub} \text{ext1}(\text{arg})\text{ext2}$


781 \newcommandx{\cmdmthargmat}[2][2=]
782   {\usrmth{\#1}\Mat}\{argmat}\{#2}\}

```

```

\cmdmthoargmat ... to do!


- \cmdmthoargmat{cmdName};  

 $\text{cmdNameMat}[\text{sub}][\text{sub}][\text{arg}] = \text{cmdName}_{sub}^{sub}(\text{arg})$
- \cmdmthoargmat{cmdName}[NewName];  

 $\text{cmdNameMat}[\text{sub}][\text{sub}][\text{arg}] = \text{NewName}_{sub}^{sub}(\text{arg})$


783 \newcommandx{\cmdmthoargmat}[2][2=]
784   {\usrmth{\#1}\Mat}\{oargmat}\{#2}\}

```

```

\cmdmthparmat ... to do!
    • \cmdmthparmat{cmdName};
      \cmdNameMat[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2
    • \cmdmthparmat{cmdName}[NewName];
      \cmdNameMat[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2
785 \newcommandx{\cmdmthparmat}[2][2=]
786   {\usrmth{#1}{Mat}{parmat}{#2}}

\cmdmthoparmat ... to do!
    • \cmdmthoparmat{cmdName};
      \cmdNameMat[sub][sub][par] = cmdNamesubsub[par]
    • \cmdmthoparmat{cmdName}[NewName];
      \cmdNameMat[sub][sub][par] = NewNamesubsub[par]
787 \newcommandx{\cmdmthoparmat}[2][2=]
788   {\usrmth{#1}{Mat}{oparmat}{#2}}

\mthvec, ... ... to do!
    • \mthvec{Name}[sub][sup][Ext] = NamesubsupExt
    • \mthargvec{Name}[sub][sup][Ext1]{ArgEx{Ex}}}[Ext2] = NamesubsupExt1(ArgExExt)Ext2
    • \mthargvec*{Name}[sub][sup][Ext1]{ArgEx{Ex}}}[Ext2] = NamesubsupExt1(ArgExExt)Ext2
    • \mthparvec{Name}[sub][sup][Ext1]{ParEx{Ex}}}[Ext2] = NamesubsupExt1[ParExExt]Ext2
    • \mthparvec*{Name}[sub][sup][Ext1]{ParEx{Ex}}}[Ext2] = NamesubsupExt1[ParExExt]Ext2
789 %% Style for Vectors
790 \cmdmthall{vec}\newcommand{\mthstyvec}[1]{\boldsymbol{\mathit{#1}}}

\Vec, ... ... to do!
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
α, β, γ, δ, ε, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϱ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, Υ, Φ, Φ, X, Ψ, Ω
791 \seqoflet{Vec}{mthvec}

\cmdmthvec ... to do!
    • \cmdmthvec{cmdName};
      \cmdNameVec[sub][sub][ext] = cmdNamesubsubext
    • \cmdmthvec{cmdName}[NewName];
      \cmdNameVec[sub][sub][ext] = NewNamesubsubext
792 \newcommandx{\cmdmthvec}[2][2=]
793   {\usrmth{#1}{Vec}{vec}{#2}}

\cmdmthargvec ... to do!
    • \cmdmthargvec{cmdName};
      \cmdNameVec[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2
    • \cmdmthargvec{cmdName}[NewName];
      \cmdNameVec[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2
794 \newcommandx{\cmdmthargvec}[2][2=]
795   {\usrmth{#1}{Vec}{argvec}{#2}}

\cmdmthoargvec ... to do!
    • \cmdmthoargvec{cmdName};
      \cmdNameVec[sub][sub][arg] = cmdNamesubsub(arg)
    • \cmdmthoargvec{cmdName}[NewName];
      \cmdNameVec[sub][sub][arg] = NewNamesubsub(arg)
796 \newcommandx{\cmdmthoargvec}[2][2=]
797   {\usrmth{#1}{Vec}{oargvec}{#2}}

```

```

\cmdmthparvec ... to do!
    • \cmdmthparvec{cmdName};
      \cmdNameVec[sub][sub][ext1]{par}[ext2] =  $cmdName_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparvec{cmdName}[NewName];
      \cmdNameVec[sub][sub][ext1]{par}[ext2] =  $NewName_{sub}^{sub}ext1[par]ext2$ 
798 \newcommandx{\cmdmthparvec}[2][2=]
799   {\usrmth{#1}{Vec}{parvec}{#2}}

\cmdmthoparvec ... to do!
    • \cmdmthoparvec{cmdName};
      \cmdNameVec[sub][sub][par] =  $cmdName_{sub}^{sub}[par]$ 
    • \cmdmthoparvec{cmdName}[NewName];
      \cmdNameVec[sub][sub][par] =  $NewName_{sub}^{sub}[par]$ 
800 \newcommandx{\cmdmthoparvec}[2][2=]
801   {\usrmth{#1}{Vec}{oparvec}{#2}}

802 \fi
803 %*****
804 %*****
805 %** Elementary Macros for Text *****
806 %*****
807 \iftxt@
808 %** Latin Abbreviations *****

\adhoc    • \adhoc = ad hoc
809 \cmdtxtabr{adhoc}[ad hoc]

\afortiori • \afortiori = a fortiori
810 \cmdtxtabr{afortiori}[a fortiori]

\apriori  • \apriori = a priori
811 \cmdtxtabr{apriori}[a priori]

\aposteriori • \aposteriori = a posteriori
812 \cmdtxtabr{aposteriori}[a posteriori]

\cf       • \cf = cf.
813 \cmdtxtabr{cf}[cf.]

\dedicto  • \dedicto = de dicto
814 \cmdtxtabr{dedicto}[de dicto]

\defacto  • \defacto = de facto
815 \cmdtxtabr{defacto}[de facto]

\dere     • \dere = de re
816 \cmdtxtabr{dere}[de re]

\divideetimpera • \divideetimpera = divide et impera
817 \cmdtxtabr{divideetimpera}[divide et impera]

\eg       • \eg = e.g.
818 \cmdtxtabr{eg}[e.g.]

\ergo     • \ergo = ergo
819 \cmdtxtabr{ergo}

\errata   • \errata = errata
820 \cmdtxtabr{errata}

```

`\erratum`      • `\erratum = erratum`  
821 `\cmdtxtabr{erratum}`

`\etal`      • `\etal = et al.`  
822 `\cmdtxtabr{etal}[et al.]`

`\etc`      • `\etc = etc.`  
823 `\cmdtxtabr{etc}[etc.]`

`\ie`      • `\ie = i.e.`  
824 `\cmdtxtabr{ie}[i.e.]`

`\mutatismutandis`      • `\mutatismutandis = mutatis mutandis`  
825 `\cmdtxtabr{mutatismutandis}[mutatis mutandis]`

`\percontra`      • `\percontra = per contra`  
826 `\cmdtxtabr{percontra}[per contra]`

`\primafacie`      • `\primafacie = prima facie`  
827 `\cmdtxtabr{primafacie}[prima facie]`

`\viceversa`      • `\viceversa = vice versa`  
828 `\cmdtxtabr{viceversa}[vice versa]`

`\vs`      • `\vs = vs.`  
829 `\cmdtxtabr{vs}[vs.]`

`\viz`      • `\viz = viz.`  
830 `\cmdtxtabr{viz}[viz.]`  
831 `%%*****%`

`\Afortiori`      • `\Afortiori = A fortiori`  
832 `\cmdtxtabr{Afortiori}[A fortiori]`

`\Apriori`      • `\Apriori = A priori`  
833 `\cmdtxtabr{Apriori}[A priori]`

`\Aposteriori`      • `\Aposteriori = A posteriori`  
834 `\cmdtxtabr{Aposteriori}[A posteriori]`

`\Dedicto`      • `\Dedicto = De dicto`  
835 `\cmdtxtabr{Dedicto}[De dicto]`

`\Defacto`      • `\Defacto = De facto`  
836 `\cmdtxtabr{Defacto}[De facto]`

`\Dere`      • `\Dere = De re`  
837 `\cmdtxtabr{Dere}[De re]`

`\Divideetimpera`      • `\Divideetimpera = Divide et impera`  
838 `\cmdtxtabr{Divideetimpera}[Divide et impera]`

`\Eg`      • `\Eg = E.g.`  
839 `\cmdtxtabr{Eg}[E.g.]`

`\Errata`      • `\Errata = Errata`  
840 `\cmdtxtabr{Errata}`

`\Erratum`      • `\Erratum = Erratum`  
841 `\cmdtxtabr{Erratum}`

`\Mutatismutandis`      • `\Mutatismutandis = Mutatis mutandis`  
842 `\cmdtxtabr{Mutatismutandis}[Mutatis mutandis]`

`\Percontra`      • `\Percontra = Per contra`  
843 `\cmdtxtabr{Percontra}[Per contra]`

`\Primafacie`      • `\Primafacie = Prima facie`  
844 `\cmdtxtabr{Primafacie}[Prima facie]`

`\Viceversa`      • `\Viceversa = Vice versa`  
845 `\cmdtxtabr{Viceversa}[Vice versa]`  
846 `%%** Italian Abbreviations *****%`  
...  
847 `%%*****%`  
...  
848 `%%** French Abbreviations *****%`

`\naif`      • `\naif = naïf`  
849 `\cmdtxtabr{naif}[na\{i}f]`

`\naive`      • `\naive = naïve`  
850 `\cmdtxtabr{naive}[na\{i}ve]`

`\role`      • `\role = rôle`  
851 `\cmdtxtabr{role}[r\^{o}le]`  
852 `%%*****%`

`\Role`      • `\Role = Rôle`  
853 `\cmdtxtabr{Role}[R\^{o}le]`  
854 `%%** English Abbreviations *****%`

`\aka`      • `\aka = a.k.a.`  
855 `\cmdtxtabr{aka}[a.k.a.]`

`\contd`      • `\contd = contd.`  
856 `\cmdtxtabr{contd}[contd.]`

`\iff`      • `\iff = iff`  
857 `\cmdtxtabr{iff}`

`\iht`      • `\iht = i.h.t.`  
858 `\cmdtxtabr{iht}[i.h.t.]`

`\stx`      • `\stx = s.t.`  
859 `\cmdtxtabr{stx}[s.t.]`

`\resp`      • `\resp = resp.`  
860 `\cmdtxtabr{resp}[resp.]`

`\wrt`      • `\wrt = w.r.t.`  
861 `\cmdtxtabr{wrt}[w.r.t.]`



```

\wlogx      • \wlogx = w.l.o.g.
862 \cmdtxtabr{wlogx}[w.l.o.g.]

863 %%%

\Contd      • \Contd = Contd.
864 \cmdtxtabr{Contd}[Contd.]

\Wlogx      • \Wlogx = W.l.o.g.
865 \cmdtxtabr{Wlogx}[W.l.o.g.]

866 \fi
867 %%%
868 %%%
869 %** Elementary Macros for Math %%%
870 %%%
871 \ifmth@

872 %** General Notation %%%

\defeq, \seteq ...
873 \DeclareRobustCommand{\defeq}
874   {\@ifstar%
875    {\mthlrel{\stackrel{\text{\textup{def}}}{=}}}%
876    {\mthlrel{\triangleq}}}%
877 \DeclareRobustCommand{\seteq}
878   {\@ifstar{\mthlrel{\Coloneqq}}{\mthlrel{\coloneqq}}}

879 %%%

\implies, ... ...
880 \DeclareRobustCommand{\implies}
881   {\mthlrel{\rightarrow}}
882 \DeclareRobustCommand{\notimplies}
883   {\mthlrel{\not\rightarrow}}

\implied, ... ...
884 \DeclareRobustCommand{\implied}
885   {\mthlrel{\leftarrow}}
886 \DeclareRobustCommand{\notimplied}
887   {\mthlrel{\not\leftarrow}}

\coimplies, ... ...
888 \DeclareRobustCommand{\coimplies}
889   {\mthlrel{\Leftrightarrow}}
890 \DeclareRobustCommand{\notcoimplies}
891   {\mthlrel{\not\Leftrightarrow}}

892 %%%

\cmodels, ... ...
893 \DeclareRobustCommand{\cmodels}
894   {\mthlrel{\models}}
895 \DeclareRobustCommand{\notcmodels}
896   {\mthlrel{\not\models}}

\cequiv, ... ...
897 \DeclareRobustCommand{\cequiv}
898   {\mthlrel{\equiv}}
899 \DeclareRobustCommand{\notcequiv}
900   {\mthlrel{\not\equiv}}

901 %%%

```

```

\denot ...
902 \DeclareRobustCommand{\denot}
903   {\@ifstar{\@sdenot}{\@denot}}
904 \DeclareRobustCommand{\@denot}[1]
905   {\mth{\argmid{\left\llbracket}{\#1}{\right\rrbracket}}}
906 \DeclareRobustCommand{\@sdenot}[1]
907   {\mth*{\argmid{\llbracket}{\#1}{\rrbracket}}}

908 %%*****%

```

```

\dual, \adj, ... ...
909 \DeclareRobustCommand{\dual}[1]
910   {\mth{\overline{\#1}}}
911 \DeclareRobustCommand{\adj}[1]
912   {\mth{\mathring{\#1}}}
913 \DeclareRobustCommand{\der}[1]
914   {\mth{\widehat{\#1}}}
915 \DeclareRobustCommand{\trn}[1]
916   {\mth{\widetilde{\#1}}}

```

```

\vec ...
917 \DeclareRobustCommand{\vec}
918   {\@ifstar{\@svec}{\@vec}}
919 \DeclareRobustCommand{\@vec}[1]
920   {\mth{\mathaccent"017E{\#1}}}
921 \DeclareRobustCommand{\@svec}[1]
922   {\mth{\overline{\#1}}}

923 %%*****%

```

```

\enumeration, ... ...
924 \varcmd{enumeration}{\mth*}{\{,\}{}}
925 \varcmd{enumerationx}{\mth*}{\{;\}{}}

```

```

\sequence, ... ...
926 \DeclareRobustCommand{\sequence}
927   {\@ifstar{\@ssequence}{\@sequence}}
928 \varcmd{@sequence}{\mth}{\left[{}{,}{\right]}{}}
929 \varcmd{@ssequence}{\mth*}{\left[{}{,}{\right]}{}}
930 \DeclareRobustCommand{\sequencel}
931   {\@ifstar{\@ssequencel}{\@sequencel}}
932 \varcmd{@sequencel}{\mth}{\left[{}{,}{\right.]}{}}
933 \varcmd{@ssequencel}{\mth*}{\left[{}{,}{\right.]}{}}
934 \DeclareRobustCommand{\sequencer}
935   {\@ifstar{\@ssequencer}{\@sequencer}}
936 \varcmd{@sequencer}{\mth}{\left.{}{,}{\right]}{}}
937 \varcmd{@ssequencer}{\mth*}{\left.{}{,}{\right]}{}}
938 \DeclareRobustCommand{\sequencex}
939   {\@ifstar{\@ssequencex}{\@sequencex}}
940 \varcmd{@sequencex}{\mth}{\left[{}{;}{\right]}{}}
941 \varcmd{@ssequencex}{\mth*}{\left[{}{;}{\right]}{}}
942 \DeclareRobustCommand{\sequencexl}
943   {\@ifstar{\@ssequencexl}{\@sequencexl}}
944 \varcmd{@sequencexl}{\mth}{\left[{}{;}{\right.]}{}}
945 \varcmd{@ssequencexl}{\mth*}{\left[{}{;}{\right.]}{}}
946 \DeclareRobustCommand{\sequencexr}
947   {\@ifstar{\@ssequencexr}{\@sequencexr}}
948 \varcmd{@sequencexr}{\mth}{\left.{}{;}{\right]}{}}
949 \varcmd{@ssequencexr}{\mth*}{\left.{}{;}{\right]}{}}

```

```

\tuple, ... ...
950 \DeclareRobustCommand{\tuple}
951   {\@ifstar{\@stuple}{\@tuple}}

```

```

952 \varcmd{@tuple}{\mth}{\left\langle}{,}{\right\rangle}{}
953 \varcmd{@stuple}{\mth*}{\langle}{,}{\rangle}{}
954 \DeclareRobustCommand{\tuplel}
955   {\@ifstar{\@stuplel}{\@tuplel}}
956 \varcmd{@tuplel}{\mth}{\left\langle}{,}{\right.}{}
957 \varcmd{@stuplel}{\mth*}{\langle}{,}{\rangle}{}
958 \DeclareRobustCommand{\tupler}
959   {\@ifstar{\@stupler}{\@tupler}}
960 \varcmd{@tupler}{\mth}{\left.}{,}{\right\rangle}{}
961 \varcmd{@stupler}{\mth*}{\rangle}{,}{\rangle}{}
962 \DeclareRobustCommand{\tuplex}
963   {\@ifstar{\@stuplex}{\@tuplex}}
964 \varcmd{@tuplex}{\mth}{\left\langle}{;}{\right\rangle}{}
965 \varcmd{@stuplex}{\mth*}{\langle}{;}{\rangle}{}
966 \DeclareRobustCommand{\tuplexl}
967   {\@ifstar{\@stuplexl}{\@tuplexl}}
968 \varcmd{@tuplexl}{\mth}{\left\langle}{;}{\right.}{}
969 \varcmd{@stuplexl}{\mth*}{\langle}{;}{\rangle}{}
970 \DeclareRobustCommand{\tuplexr}
971   {\@ifstar{\@stuplexr}{\@tuplexr}}
972 \varcmd{@tuplexr}{\mth}{\left.}{;}{\right\rangle}{}
973 \varcmd{@stuplexr}{\mth*}{\rangle}{;}{\rangle}{}

974 %** Sets *****%

\set, ... ...
975 \DeclareRobustCommand{\set}
976   {\@ifstar{\@sset{\vert}}{\@set{\vert}}}
977 \DeclareRobustCommand{\setx}
978   {\@ifstar{\@sset{:}}{\@set{.!\:}}}
979 \DeclareRobustCommand{\@set}[3]
980   {\mth{\argmid{\left\lbrace}{\argsep{#2}{\,,\middle#1\,,}{#3}}{\right\rbrace}}}
981 \DeclareRobustCommand{\@sset}[3]
982   {\mth*{\argmid{\lbrace}{\argsep{#2}{\,,#1\,,}{#3}}{\rbrace}}}
983 \DeclareRobustCommand{\setl}
984   {\@ifstar{\@ssetl{\vert}}{\@setl{\vert}}}
985 \DeclareRobustCommand{\setlx}
986   {\@ifstar{\@ssetl{:}}{\@setl{.!\:!\:}}}
987 \DeclareRobustCommand{\@setl}[2]
988   {\mth{\argmid{\left\lbrace}{#2}{\,,\right#1!}}}
989 \DeclareRobustCommand{\@ssetl}[2]
990   {\mth*{\argmid{\lbrace}{#2}{\,,#1!}}}
991 \DeclareRobustCommand{\setr}
992   {\@ifstar{\@ssetr}{\@setr}}
993 \DeclareRobustCommand{\setrx}
994   {\@ifstar{\@ssetr}{\@setr}}
995 \DeclareRobustCommand{\@setr}[1]
996   {\mth{\argmid{\left.}{#1}{\right\rbrace}}}
997 \DeclareRobustCommand{\@ssetr}[1]
998   {\mth*{\argmid{#1}{\rbrace}}}

\card ...
999 \DeclareRobustCommand{\card}
1000   {\@ifstar{\@scard}{\@card}}
1001 \DeclareRobustCommand{\@card}[1]
1002   {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}
1003 \DeclareRobustCommand{\@scard}[1]
1004   {\mth*{\argmid{\lvert}{#1}{\rvert}}}

\pow ...
1005 \DeclareRobustCommand{\pow}[1]
1006   {\mth{2^{\defval{#1}{\cdot}}}}

1007 %** Relations *****%

```

```

\emptyrel ...
1008 \DeclareRobustCommand{\emptyrel}
1009   {\mth{\varnothing}}

1010 %%*****%

\dom, \cod, ... ...
1011 \usrmth{\dom}{\argfun}
1012 \usrmth{\cod}{\argfun}
1013 \usrmth{\rng}{\argfun}
1014 \usrmth{\img}{\argfun}

1015 %%*****%

\prj ...
1016 \DeclareRobustCommand{\prj}
1017   {\mthlbop{\downarrow}}

\rst ...
1018 \DeclareRobustCommand{\rst}
1019   {\mthlbop{\upharpoonright}}

\cmp ...
1020 \DeclareRobustCommand{\cmp}
1021   {\mthlbop{\circ}}

1022 %%** Functions *****%

\emptyfun ...
1023 \DeclareRobustCommand{\emptyfun}
1024   {\mth{\varnothing}}

1025 %%*****%

\pto, \pmapsto ...
1026 \DeclareMathOperator{\pto}
1027   {\ensuremath{\rightharpoonup}}
1028 \DeclareMathOperator{\pmapsto}
1029   {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize$\llcorner$}}}%
1030     \kern-1.5ex\rightharpoonup}}

1031 %%*****%

\fix, \ifp, ... ...
1032 \usrmth{\fix}{\fun}
1033 \usrmth{\ifp}{\fun}
1034 \usrmth{\lfp}{\fun}
1035 \usrmth{\gfp}{\fun}

1036 %%*****%

\Aomega, \AOmega ...
1037 \usrmth{Aomega}{\argset}[\omega]
1038 \usrmth{AOmega}{\argset}[\Omega]

\Atheta, \ATheta ...
1039 \usrmth{Atheta}{\argset}[\theta]
1040 \usrmth{ATheta}{\argset}[\Theta]

\Aomicron, ... ...
1041 \usrmth{Aomicron}{\argset}[\omicron]
1042 \usrmth{AOmicron}{\argset}[\Omicron]

1043 %%** Numbers *****%

```

```

\SetB ...
1044 \DeclareRobustCommand{\SetB}
1045   {\mthset[mathbb]{B}}

\SetF ...
1046 \DeclareRobustCommand{\SetF}
1047   {\mthset[mathbb]{F}}

\SetN, ... ...
1048 \DeclareRobustCommand{\SetN}
1049   {\mthset[mathbb]{N}}
1050 \DeclareRobustCommand{\SetNI}[1] []
1051   {\SetN[\infty #1]}

\SetZ, ... ...
1052 \DeclareRobustCommand{\SetZ}
1053   {\mthset[mathbb]{Z}}
1054 \DeclareRobustCommand{\SetZI}[1] []
1055   {\SetZ[\pm\infty #1]}
1056 \DeclareRobustCommand{\SetZPI}[1] []
1057   {\SetZ[+\infty #1]}
1058 \DeclareRobustCommand{\SetZNI}[1] []
1059   {\SetZ[-\infty #1]}

\SetQ, ... ...
1060 \DeclareRobustCommand{\SetQ}
1061   {\mthset[mathbb]{Q}}
1062 \DeclareRobustCommand{\SetQI}[1] []
1063   {\SetQ[\pm\infty #1]}
1064 \DeclareRobustCommand{\SetQPI}[1] []
1065   {\SetQ[+\infty #1]}
1066 \DeclareRobustCommand{\SetQNI}[1] []
1067   {\SetQ[-\infty #1]}

\SetR, ... ...
1068 \DeclareRobustCommand{\SetR}
1069   {\mthset[mathbb]{R}}
1070 \DeclareRobustCommand{\SetRI}[1] []
1071   {\SetR[\pm\infty #1]}
1072 \DeclareRobustCommand{\SetRPI}[1] []
1073   {\SetR[+\infty #1]}
1074 \DeclareRobustCommand{\SetRNI}[1] []
1075   {\SetR[-\infty #1]}

\SetC, ... ...
1076 \DeclareRobustCommand{\SetC}
1077   {\mthset[mathbb]{C}}
1078 \DeclareRobustCommand{\SetCI}[1] []
1079   {\SetC[\infty #1]}

1080 %%*****

\num, ... ...
1081 \DeclareRobustCommand{\num}[1]
1082   {\mth{[#1]}}
1083 \DeclareRobustCommand{\numcc}[2]
1084   {\mth{[\argsep{#1}{,}{#2}]}}
1085 \DeclareRobustCommand{\numco}[2]
1086   {\mth{[\argsep{#1}{,}{#2})}}
1087 \DeclareRobustCommand{\numoc}[2]
1088   {\mth{(\argsep{#1}{,}{#2})}}
1089 \DeclareRobustCommand{\numoo}[2]
1090   {\mth{(\argsep{#1}{,}{#2}))}}

```

```

1091 %%*****%
\abs, \norm ...
1092 \DeclareRobustCommand{\abs}
1093   {\@ifstar{\@sabs}{\@abs}}
1094 \DeclareRobustCommand{\@abs}[1]
1095   {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}
1096 \DeclareRobustCommand{\@sabs}[1]
1097   {\mth*{\argmid{\lvert}{#1}{\rvert}}}
1098 \DeclareRobustCommand{\norm}
1099   {\@ifstar{\@snorm}{\@norm}}
1100 \DeclareRobustCommand{\@norm}[1]
1101   {\mth{\argmid{\left\lVert}{#1}{\right\rVert}}}
1102 \DeclareRobustCommand{\@snorm}[1]
1103   {\mth*{\argmid{\lVert}{#1}{\rVert}}}

\floor, \ceil ...
1104 \DeclareRobustCommand{\floor}
1105   {\@ifstar{\@sfloor}{\@ffloor}}
1106 \DeclareRobustCommand{\@ffloor}[1]
1107   {\mth{\argmid{\left\lfloor}{#1}{\right\rfloor}}}
1108 \DeclareRobustCommand{\@sfloor}[1]
1109   {\mth*{\argmid{\lfloor}{#1}{\rfloor}}}
1110 \DeclareRobustCommand{\ceil}
1111   {\@ifstar{\@sceil}{\@ceiling}}
1112 \DeclareRobustCommand{\@ceiling}[1]
1113   {\mth{\argmid{\left\lceil}{#1}{\right\rceil}}}
1114 \DeclareRobustCommand{\@sceil}[1]
1115   {\mth*{\argmid{\lceil}{#1}{\rceil}}}

1116 %%*****%

\arg ...
1117 \usrmth{arg}{\fun}

\evn, \odd ...
1118 \usrmth{evn}{\fun}
1119 \usrmth{odd}{\fun}

\bst, ... ...
1120 \usrmth{bst}{\fun}
1121 \usrmth{argbst}{\fun}[arg\,bst]

\min, \max, ... ...
1122 \usrmth{min}{\fun}
1123 \usrmth{max}{\fun}
1124 \usrmth{argmin}{\fun}[arg\,min]
1125 \usrmth{argmax}{\fun}[arg\,max]

\inf, \sup ...
1126 \usrmth{inf}{\fun}
1127 \usrmth{sup}{\fun}

1128 %%** Sequences *****%

\emptyseq ...
1129 \DeclareRobustCommand{\emptyseq}
1130   {\mth{\varepsilon}}

\len ...
1131 \DeclareRobustCommand{\len}
1132   {\@ifstar{\@slen}{\@len}}
1133 \DeclareRobustCommandx{\@len}[3][1=, 2=]

```

```

1134 {\mth{\argmid{#1\lvert}{#3}{#2\rvert}}}}
1135 \DeclareRobustCommand{\@len}[1]
1136 {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}}
1137 \DeclareRobustCommand{\@slen}[1]
1138 {\mth*{\argmid{\lvert}{#1}{\rvert}}}}

\fst, \lst ...

1139 \usrmth{fst}{-}{argfun}
1140 \usrmth{lst}{-}{argfun}

1141 \fi
1142 %%%
1143 %%%
1144 %** Macros for Computational-Complexity Classes %%
1145 %%%
1146 \ifcom@

```

\defcomcls ... to do!

- \defcomcls{CompClass};  

$$\text{CompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{COMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$$
- \defcomcls{CompClass}[NewClass];  

$$\text{CompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{NEWCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$$

```

1147 \newcommandx{\defcomcls}[2][2=]
1148 {\csdef{#1}{\txtoargcom{\defval{#2}{#1}}}}

```

\defcomclsgrp ... to do!

- \defcomclsgrp{CompClass};  

$$\begin{aligned}
&\text{CompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{COMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{CoCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{COMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{CoCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CompClassH}[\text{sub}][\text{sup}][\text{arg}] = \text{COMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoCompClassH}[\text{sub}][\text{sup}][\text{arg}] = \text{CoCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CompClassC}[\text{sub}][\text{sup}][\text{arg}] = \text{COMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoCompClassC}[\text{sub}][\text{sup}][\text{arg}] = \text{CoCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
\\
&\text{DCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{DCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoDCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{CoDCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{DCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{DCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoDCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{CoDCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{DCompClassH}[\text{sub}][\text{sup}][\text{arg}] = \text{DCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoDCompClassH}[\text{sub}][\text{sup}][\text{arg}] = \text{CoDCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{DCompClassC}[\text{sub}][\text{sup}][\text{arg}] = \text{DCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoDCompClassC}[\text{sub}][\text{sup}][\text{arg}] = \text{CoDCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
\\
&\text{NCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{NCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoNCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{CoNCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{NCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{NCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoNCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{CoNCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{NCompClassH}[\text{sub}][\text{sup}][\text{arg}] = \text{NCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoNCompClassH}[\text{sub}][\text{sup}][\text{arg}] = \text{CoNCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{NCompClassC}[\text{sub}][\text{sup}][\text{arg}] = \text{NCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoNCompClassC}[\text{sub}][\text{sup}][\text{arg}] = \text{CoNCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
\\
&\text{UCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{UCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoUCompClass}[\text{sub}][\text{sup}][\text{arg}] = \text{CoUCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{UCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{UCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG}) \\
&\text{CoUCompClassE}[\text{sub}][\text{sup}][\text{arg}] = \text{CoUCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})
\end{aligned}$$

```

\UCompClassH[sub][sup][arg] = UCOMPCLASS-HARDSUB(ARG)
\CoUCompClassH[sub][sup][arg] = CoUCOMPCLASS-HARDSUB(ARG)
\UCompClassC[sub][sup][arg] = UCOMPCLASS-COMPLETESUB(ARG)
\CoUCompClassC[sub][sup][arg] = CoUCOMPCLASS-COMPLETESUB(ARG)

\ACompClass[sub][sup][arg] = ACOMPCLASSSUB(ARG)
\CoACompClass[sub][sup][arg] = CoACOMPCLASSSUB(ARG)
\ACompClassE[sub][sup][arg] = ACOMPCLASS-EASYSUB(ARG)
\CoACompClassE[sub][sup][arg] = CoACOMPCLASS-EASYSUB(ARG)
\ACompClassH[sub][sup][arg] = ACOMPCLASS-HARDSUB(ARG)
\CoACompClassH[sub][sup][arg] = CoACOMPCLASS-HARDSUB(ARG)
\ACompClassC[sub][sup][arg] = ACOMPCLASS-COMPLETESUB(ARG)
\CoACompClassC[sub][sup][arg] = CoACOMPCLASS-COMPLETESUB(ARG)

• \defcomclsggrp{CompClass}[NewClass];

\CompClass[sub][sup][arg] = NEWCLASSSUB(ARG)
\CoCompClass[sub][sup][arg] = CoNEWCLASSSUB(ARG)
\CompClassE[sub][sup][arg] = NEWCLASS-EASYSUB(ARG)
\CoCompClassE[sub][sup][arg] = CoNEWCLASS-EASYSUB(ARG)
\CompClassH[sub][sup][arg] = NEWCLASS-HARDSUB(ARG)
\CoCompClassH[sub][sup][arg] = CoNEWCLASS-HARDSUB(ARG)
\CompClassC[sub][sup][arg] = NEWCLASS-COMPLETESUB(ARG)
\CoCompClassC[sub][sup][arg] = CoNEWCLASS-COMPLETESUB(ARG)

\DCompClass[sub][sup][arg] = DNEWCLASSSUB(ARG)
\CoDCompClass[sub][sup][arg] = CoDNEWCLASSSUB(ARG)
\DCompClassE[sub][sup][arg] = DNEWCLASS-EASYSUB(ARG)
\CoDCompClassE[sub][sup][arg] = CoDNEWCLASS-EASYSUB(ARG)
\DCompClassH[sub][sup][arg] = DNEWCLASS-HARDSUB(ARG)
\CoDCompClassH[sub][sup][arg] = CoDNEWCLASS-HARDSUB(ARG)
\DCompClassC[sub][sup][arg] = DNEWCLASS-COMPLETESUB(ARG)
\CoDCompClassC[sub][sup][arg] = CoDNEWCLASS-COMPLETESUB(ARG)

\NCompClass[sub][sup][arg] = NNEWCLASSSUB(ARG)
\CoNCompClass[sub][sup][arg] = CoNNEWCLASSSUB(ARG)
\NCompClassE[sub][sup][arg] = NNEWCLASS-EASYSUB(ARG)
\CoNCompClassE[sub][sup][arg] = CoNNEWCLASS-EASYSUB(ARG)
\NCompClassH[sub][sup][arg] = NNEWCLASS-HARDSUB(ARG)
\CoNCompClassH[sub][sup][arg] = CoNNEWCLASS-HARDSUB(ARG)
\NCompClassC[sub][sup][arg] = NNEWCLASS-COMPLETESUB(ARG)
\CoNCompClassC[sub][sup][arg] = CoNNEWCLASS-COMPLETESUB(ARG)

\UCompClass[sub][sup][arg] = UNEWCLASSSUB(ARG)
\CoUCompClass[sub][sup][arg] = CoUNEWCLASSSUB(ARG)
\UCompClassE[sub][sup][arg] = UNEWCLASS-EASYSUB(ARG)
\CoUCompClassE[sub][sup][arg] = CoUNEWCLASS-EASYSUB(ARG)
\UCompClassH[sub][sup][arg] = UNEWCLASS-HARDSUB(ARG)
\CoUCompClassH[sub][sup][arg] = CoUNEWCLASS-HARDSUB(ARG)
\UCompClassC[sub][sup][arg] = UNEWCLASS-COMPLETESUB(ARG)
\CoUCompClassC[sub][sup][arg] = CoUNEWCLASS-COMPLETESUB(ARG)

\ACompClass[sub][sup][arg] = ANEWCLASSSUB(ARG)
\CoACompClass[sub][sup][arg] = CoANEWCLASSSUB(ARG)
\ACompClassE[sub][sup][arg] = ANEWCLASS-EASYSUB(ARG)
\CoACompClassE[sub][sup][arg] = CoANEWCLASS-EASYSUB(ARG)
\ACompClassH[sub][sup][arg] = ANEWCLASS-HARDSUB(ARG)
\CoACompClassH[sub][sup][arg] = CoANEWCLASS-HARDSUB(ARG)
\ACompClassC[sub][sup][arg] = ANEWCLASS-COMPLETESUB(ARG)
\CoACompClassC[sub][sup][arg] = CoANEWCLASS-COMPLETESUB(ARG)

1149 \newcommandx{\defcomclsggrp}[2][2=]
1150   {\defcomclsgrpsem{#1}{\defval{#2}{#1}}%
1151   \defcomclsgrpsem{#1}{\defval{#2}{#1}}[Co]}
1152 \newcommandx{\defcomclsgrpsem}[3][3=]
1153   {\defcomclsgrpred{#3#1}{#2}{#3}%

```



```

1154 \defcomclsgpred{#3D#1}{#2}{#3D}%
1155 \defcomclsgpred{#3N#1}{#2}{#3N}%
1156 \defcomclsgpred{#3U#1}{#2}{#3U}%
1157 \defcomclsgpred{#3A#1}{#2}{#3A}%
1158 \newcommandx{\defcomclsgpred}[3][3=]
1159 {\defcomclsgprcmd{#1}{#2}{#3}%
1160 \defcomclsgprcmd{#1E}{#2}{#3}[-easy]%
1161 \defcomclsgprcmd{#1H}{#2}{#3}[-hard]%
1162 \defcomclsgprcmd{#1C}{#2}{#3}[-complete]]%
1163 \newcommandx{\defcomclsgprcmd}[4][3=, 4=]
1164 {\csdef{#1}{\txtoargcom{#3#2#4}}}

\defcomhrc ... to do!
    • \defcomhrc{CompHierarchy};

      CompHierarchy[sub][sup][par] = COMPHIERARCHYSUB[PAR]

    • \defcomhrc{CompHierarchy}[NewHierarchy];

      CompHierarchy[sub][sup][par] = NEWHIERARCHYSUB[PAR]

1165 \newcommandx{\defcomhrc}[2][2=]
1166 {\csdef{#1}{\txtoparcom{\defval{#2}{#1}}}}

1167 %%*****%

\Easy, \Hard, ...

1168 \cmdtxtcom{Easy}
1169 \cmdtxtcom{Hard}
1170 \cmdtxtcom{Complete}

1171 %%*****%

\FPT    • \FPT[sub][sup][arg] = FPTSUB(ARG)
1172 \defcomcls{FPT}

1173 %%*****%

\Time, ...
    • \Time[sub][sup][arg] = TIMESUB(ARG)
      \TimeE[sub][sup][arg] = TIME-EASYSUB(ARG)
      \TimeH[sub][sup][arg] = TIME-HARDSUB(ARG)
      \TimeC[sub][sup][arg] = TIME-COMPLETESUB(ARG)
    • \DTime[sub][sup][arg] = DTIMESUB(ARG)
      \DTimeE[sub][sup][arg] = DTIME-EASYSUB(ARG)
      \DTimeH[sub][sup][arg] = DTIME-HARDSUB(ARG)
      \DTimeC[sub][sup][arg] = DTIME-COMPLETESUB(ARG)
    • \NTime[sub][sup][arg] = NTIMESUB(ARG)
      \NTimeE[sub][sup][arg] = NTIME-EASYSUB(ARG)
      \NTimeH[sub][sup][arg] = NTIME-HARDSUB(ARG)
      \NTimeC[sub][sup][arg] = NTIME-COMPLETESUB(ARG)
    • \UTime[sub][sup][arg] = UTIMESUB(ARG)
      \UTimeE[sub][sup][arg] = UTIME-EASYSUB(ARG)
      \UTimeH[sub][sup][arg] = UTIME-HARDSUB(ARG)
      \UTimeC[sub][sup][arg] = UTIME-COMPLETESUB(ARG)
    • \ATime[sub][sup][arg] = ATIMESUB(ARG)
      \ATimeE[sub][sup][arg] = ATIME-EASYSUB(ARG)
      \ATimeH[sub][sup][arg] = ATIME-HARDSUB(ARG)
      \ATimeC[sub][sup][arg] = ATIME-COMPLETESUB(ARG)
1174 \defcomclsgpr{Time}

\Space, ...
    • \Space[sub][sup][arg] = SPACESUB(ARG)
      \SpaceE[sub][sup][arg] = SPACE-EASYSUB(ARG)
      \SpaceH[sub][sup][arg] = SPACE-HARDSUB(ARG)
      \SpaceC[sub][sup][arg] = SPACE-COMPLETESUB(ARG)

```



\PTime, ...

- \PTime[sub][sup][arg] = PTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \PTimeE[sub][sup][arg] = PTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \PTimeH[sub][sup][arg] = PTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \PTimeC[sub][sup][arg] = PTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPTIME[sub][sup][arg] = DPTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPTIMEE[sub][sup][arg] = DPTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPTIMEH[sub][sup][arg] = DPTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPTIMEC[sub][sup][arg] = DPTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPTime[sub][sup][arg] = NPTime<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPTimeE[sub][sup][arg] = NPTime-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPTimeH[sub][sup][arg] = NPTime-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPTimeC[sub][sup][arg] = NPTime-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPTIME[sub][sup][arg] = UPTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPTIMEE[sub][sup][arg] = UPTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPTIMEH[sub][sup][arg] = UPTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPTIMEC[sub][sup][arg] = UPTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APTime[sub][sup][arg] = APTime<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APTimeE[sub][sup][arg] = APTime-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APTimeH[sub][sup][arg] = APTime-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APTimeC[sub][sup][arg] = APTime-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)

1178 \defcomclsgrp{PTime}

\PSpace, ...

- \PSpace[sub][sup][arg] = PSPACE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \PSpaceE[sub][sup][arg] = PSPACE-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \PSpaceH[sub][sup][arg] = PSPACE-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \PSpaceC[sub][sup][arg] = PSPACE-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPSpace[sub][sup][arg] = DPSpace<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPSpaceE[sub][sup][arg] = DPSpace-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPSpaceH[sub][sup][arg] = DPSpace-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DPSpaceC[sub][sup][arg] = DPSpace-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPSpace[sub][sup][arg] = NPSpace<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPSpaceE[sub][sup][arg] = NPSpace-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPSpaceH[sub][sup][arg] = NPSpace-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NPSpaceC[sub][sup][arg] = NPSpace-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPSpace[sub][sup][arg] = UPSpace<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPSpaceE[sub][sup][arg] = UPSpace-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPSpaceH[sub][sup][arg] = UPSpace-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UPSpaceC[sub][sup][arg] = UPSpace-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APSpace[sub][sup][arg] = APSpace<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APSpaceE[sub][sup][arg] = APSpace-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APSpaceH[sub][sup][arg] = APSpace-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \APSpaceC[sub][sup][arg] = APSpace-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)

1179 \defcomclsgrp{PSpace}

\QPTIME, ...

- \QPTIME[sub][sup][arg] = QPTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \QPTIMEE[sub][sup][arg] = QPTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \QPTIMEH[sub][sup][arg] = QPTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \QPTIMEC[sub][sup][arg] = QPTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DQPTIME[sub][sup][arg] = DQPTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DQPTIMEE[sub][sup][arg] = DQPTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DQPTIMEH[sub][sup][arg] = DQPTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \DQPTIMEC[sub][sup][arg] = DQPTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NQPTIME[sub][sup][arg] = NQPTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NQPTIMEE[sub][sup][arg] = NQPTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NQPTIMEH[sub][sup][arg] = NQPTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \NQPTIMEC[sub][sup][arg] = NQPTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UQPTIME[sub][sup][arg] = UQPTIME<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UQPTIMEE[sub][sup][arg] = UQPTIME-EASY<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UQPTIMEH[sub][sup][arg] = UQPTIME-HARD<sub>SUB</sub><sup>SUP</sup>(ARG)
- \UQPTIMEC[sub][sup][arg] = UQPTIME-COMPLETE<sub>SUB</sub><sup>SUP</sup>(ARG)



- $\backslash\text{ExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{NEXPSPACE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{ExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{NEXPSPACE-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{ExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{NEXPSPACE-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{ExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{NEXPSPACE-COMplete}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{UEXPSPACE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{UEXPSPACE-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{UEXPSPACE-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{UEXPSPACE-COMplete}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{AEXPSPACE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{AEXPSPACE-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{AEXPSPACE-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{AEXPSPACE-COMplete}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

```

1183 \defcomclsggrp{ExpSpace}

1184 %*****%

\PH      • \PH[sub][sup][par] = PH_{SUB}^{SUP}[PAR]
1185 \defcomhrc{PH}

\WH      • \WH[sub][sup][par] = W_{SUB}^{SUP}[PAR]
1186 \defcomhrc{WH}{W}

\AH      • \AH[sub][sup][par] = A_{SUB}^{SUP}[PAR]
1187 \defcomhrc{AH}{A}

\DLH, \DBH      • \DLH[sub][sup][par] = \Delta_{SUB}^{SUP}[PAR]
                  • \DBH[sub][sup][par] = \Delta_{SUB}^{SUP}[PAR]
1188 \defcomhrc{DLH}{\mth{\Delta}}
1189 \defcomhrc{DBH}{\mth[mathbf]{\Delta}}

\ELH, \EBH      • \ELH[sub][sup][par] = \Sigma_{SUB}^{SUP}[PAR]
                  • \EBH[sub][sup][par] = \Sigma_{SUB}^{SUP}[PAR]
1190 \defcomhrc{ELH}{\mth{\Sigma}}
1191 \defcomhrc{EBH}{\mth[mathbf]{\Sigma}}

\ULH, \UBH      • \ULH[sub][sup][par] = \Pi_{SUB}^{SUP}[PAR]
                  • \UBH[sub][sup][par] = \Pi_{SUB}^{SUP}[PAR]
1192 \defcomhrc{ULH}{\mth{\Pi}}
1193 \defcomhrc{UBH}{\mth[mathbf]{\Pi}}

1194 \fi
1195 %*****%
1196 %*****%
1197 %** Macros for Games *****%
1198 %*****%
1199 \ifgam@
1200 %** Logic Games *****%

\SATG, ... ...
1201 % Satisfiability Games
1202 \cmdtxtopname{SATG}{Sat}
1203
1204 % Validity Games
1205 \cmdtxtopname{VALG}{Val}
1206
1207 % Evaluation Games
1208 \cmdtxtopname{EVLG}{Evl}
1209
1210 % Synthesis Games
1211 \cmdtxtopname{SYNG}{Syn}

```

```

1212
1213 %% Model-Checking Games
1214 \cmdtxttoparname{MCG}[MC]
1215
1216 %% Ehrenfeucht-Fraisse Games
1217 \cmdtxttoparname{EFG}[EF]

1218 %** Syntax *****%

```

\PlrSym, \OppSym ...

```

1219 \newcommand{\plrsym}{E}
1220 \cmdmthsym{Plr}[\plrsym]
1221 \newcommand{\oppsym}{A}
1222 \cmdmthsym{Opp}[\oppsym]

```

\ArenaName, ...

```

1223 \newcommand{\arenaname}{A}
1224 \usrmthlatupp{Arena}{Name}{name}[\arenaname]

```

\PosSet, ...

```

1225 \newcommand{\possym}{v}
1226 \newcommand{\posset}{Ps}
1227 \cmdmthsetext{Pos}[\posset][\possym]
1228 \cmdmthsymelm{ipos}[\possym_{I}]
1229 \cmdmthsymelm{fpos}[\possym_{F}]
1230 \cmdmthset{PPos}[\posset_{\PlrSym}]
1231 \cmdmthsymelm{ppos}[\possym_{\PlrSym}]
1232 \cmdmthset{OPos}[\posset_{\OppSym}]
1233 \cmdmthsymelm{opos}[\possym_{\OppSym}]

```

\PlrFun ...

```

1234 \newcommand{\plrfun}{pl}
1235 \cmdmthfun{plr}[\plrfun]

```

\MovRel ...

```

1236 \newcommand{\movrel}{Mv}
1237 \cmdmthrel{Mov}[\movrel]

```

\GameName, ...

```

1238 \newcommand{\gamename}{Game}
1239 \usrmthlatupp{Game}{Name}{name}[\gamename]

```

\WinSet ...

```

1240 \newcommand{\winset}{Wn}
1241 \cmdmthset{Win}[\winset]

```

\ObsSet, \obsFun ...

```

1242 \newcommand{\obsset}{Ob}
1243 \cmdmthset{Obs}[\obsset]
1244 \cmdmthfun{obs}

```

```

1245 %** Semantics *****%

```

\PthSet, \pthFun ...

```

1246 \newcommand{\pthsym}{pi}
1247 \newcommand{\pthset}{Pth}
1248 \cmdmthsetext{Pth}[\pthset][\pthsym]
1249 \cmdmthfun{pth}

```

\HstSet, ...

```

1250 \newcommand{\hstsym}{rho}
1251 \newcommand{\hstset}{Hst}
1252 \cmdmthsetext{Hst}[\hstset][\hstsym]

```

```

1253 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1254 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1255 \cmdmthset{OHst}[\hstset_{\OppSym}]
1256 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1257 \cmdmthfun{hst}

\PlaySet, \playFun ...
1258 \newcommand{\playsym}{\pi}
1259 \newcommand{\playset}{\Play}
1260 \cmdmthsetext{Play}[\playset][\playsym]
1261 \cmdmthfun{play}

\StrSet, ... ...
1262 \newcommand{\strsym}{\sigma}
1263 \newcommand{\strset}{\Str}
1264 \cmdmthsetext{Str}[\strset][\strsym]
1265 \cmdmthset{PStr}[\strset_{\PlrSym}]
1266 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1267 \cmdmthset{OStr}[\strset_{\OppSym}]
1268 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

\PrfSet, \prfFun ...
1269 \newcommand{\prfsym}{\xi}
1270 \newcommand{\prfset}{\Prf}
1271 \cmdmthsetext{Prf}[\prfset][\prfsym]

\preFun, \sucFun ...
1272 \newcommand{\prefun}{\pre}
1273 \cmdmthoargfun{pre}[\prefun]
1274 \newcommand{\sucfun}{\suc}
1275 \cmdmthoargfun{suc}[\sucfun]

\entFun, \escFun ...
1276 \newcommand{\entfun}{\ent}
1277 \cmdmthoargfun{ent}[\entfun]
1278 \newcommand{\escfun}{\esc}
1279 \cmdmthoargfun{esc}[\escfun]

\intFun, \outFun ...
1280 \newcommand{\intfun}{\int}
1281 \cmdmthoargfun{int}[\intfun]
1282 \newcommand{\outfun}{\out}
1283 \cmdmthoargfun{out}[\outfun]

\atrFun, \rchFun ...
1284 \newcommand{\atrfun}{\atr}
1285 \cmdmthoargfun{atr}[\atrfun]
1286 \newcommand{\rchfun}{\rch}
1287 \cmdmthoargfun{rch}[\rchfun]

\liftFun ...
1288 \newcommand{\liftfun}{\lift}
1289 \cmdmthoargfun{lift}[\liftfun]

\solFun ...
1290 \newcommand{\solfun}{\sol}
1291 \cmdmthoargfun{sol}[\solfun]

1292 %** Qualitative Games on Graph *****%

```

```

\BG, ... ...
1293 %% Buchi Games
1294 \cmdtxttoparname{BG}
1295
1296 %% Co-Buchi Games
1297 \cmdtxttoparname{CG}
1298
1299 %% Parity Games
1300 \cmdtxttoparname{PG}
1301
1302 %% Rabin Games
1303 \cmdtxttoparname{RG}
1304
1305 %% Streett Games
1306 \cmdtxttoparname{SG}
1307
1308 %% Muller Games
1309 \cmdtxttoparname{MG}

1310 %** Syntax *****%

```

```

\EvnSym, \OddSym ...
1311 \newcommand{\evnsym}{0}
1312 \cmdmthsym{Evnsym}[\evnsym]
1313 \newcommand{\oddsym}{1}
1314 \cmdmthsym{Oddsym}[\oddsym]

\PrtSet, \prtFun ...
1315 \newcommand{\prtsym}{p}
1316 \newcommand{\prtset}{Pr}
1317 \cmdmthsetext{Prt}[\prtset][\prtsym]
1318 \cmdmthfun{prt}[pr]

1319 %** Semantics *****%
...
1320 %** Quantitative Games on Graph *****%

```

```

\EG, ... ...
1321 %% Energy Games
1322 \cmdtxttoparname{EG}
1323
1324 %% Mean-Payoff Games
1325 \cmdtxttoparname{MPG}
1326
1327 %% Discounted-Payoff Games
1328 \cmdtxttoparname{DPG}

1329 %** Syntax *****%

```

```

\MaxSym, \MinSym ...
1330 \newcommand{\maxsym}{\oplus}
1331 \cmdmthsym{Max}[\maxsym]
1332 \newcommand{\minsym}{\boxminus}
1333 \cmdmthsym{Min}[\minsym]

```

```

\WghSet, \wghFun ...
1334 \newcommand{\wghsym}{w}
1335 \newcommand{\wghset}{Wg}
1336 \cmdmthsetext{Wgh}[\wghset][\wghsym]
1337 \cmdmthfun{wgh}[wg]

1338 %** Semantics *****%

```



```

...
1339 \fi
1340 %*****
1341 %*****
1342 %** Macros for Logics *****
1343 %*****
1344 \iflog@
1345 %** Propositional Logics *****

\BF, \QBF, ... ...
1346 % Boolean Formulae
1347 \cmdtxttoparname{BF}
1348
1349 % Quantified Boolean Formulae
1350 \DeclareRobustCommand{\QBF}
1351   {\{\textname{Q}\}\BF}
1352 \DeclareRobustCommand{\EBF}
1353   {\ensuremath{\exists}\BF}
1354 \DeclareRobustCommand{\UBF}
1355   {\ensuremath{\forall}\BF}

1356 %** Syntax *****

\LogSig, ... ...
1357 \newcommand{\logsig}{L}
1358 \usrmthlatupp{Log}{Sig}{sig}[\logsig]

\Tt, \Ff ...
1359 \newcommand{\ttsym}{\top}
1360 \usrmth{Tt}{\}{sym}[\ttsym]
1361 \newcommand{\ffsym}{\bot}
1362 \usrmth{Ff}{\}{sym}[\ffsym]

\LNeg, \LNot ...
1363 \newcommand{\lnegsym}{\neg}
1364 \usrmth{LNeg}{\}{luop}[\lnegsym]
1365 \newcommand{\lnotsym}{\sim}
1366 \usrmth{LNot}{\}{luop}[\lnotsym]

\LCon, \LDis ...
1367 \newcommand{\lconsym}{\land}
1368 \usrmth{LCon}{\}{lbop}[\lconsym]
1369 \newcommand{\ldissym}{\lor}
1370 \usrmth{LDis}{\}{lbop}[\ldissym]

\LImp, \LCoi ...
1371 \newcommand{\limpsym}{\rightarrow}
1372 \usrmth{LImp}{\}{lbop}[\limpsym]
1373 \newcommand{\lcoisym}{\leftrightarrow}
1374 \usrmth{LCoi}{\}{lbop}[\lcoisym]

\LExs, \LAll ...
1375 \newcommand{\lexssym}{\exists}
1376 \usrmth{LExs}{\}{luop}[\lexssym]
1377 \newcommand{\lallsym}{\forall}
1378 \usrmth{LAll}{\}{luop}[\lallsym]

\APSet, ... ...
1379 \newcommand{\apsym}{p}
1380 \newcommand{\apset}{AP}
1381 \cmdmthsetext{AP}[\apset] [\apsym]
1382 \cmdmthfun{ap}\usrmth{ap}{\}{argfun}

```

```

\sub ...
1383 \usrmth{sub}{-}{argfun}

\Cnt, \Qnt, \Sym ...
1384 \usrmth{Cnt}{-}{sym}[C]
1385 \usrmth{Qnt}{-}{sym}[Q]
1386 \usrmth{Sym}{-}{sym}[\odot]

\QAE, \QEA ...
1387 \usrmth{QAE}{-}{sym}[\forall\exists]
1388 \usrmth{QEA}{-}{sym}[\exists\forall]

\QntSet, ... ...
1389 \newcommand{\qntsym}{\wp}
1390 \newcommand{\qntset}{\Qn}
1391 \cmdmthsetext{Qnt}[\qntset][\qntsym]

\free, \bound ...
1392 \usrmth{free}{-}{argfun}
1393 \usrmth{bound}{-}{argfun}

\dep, \alt ...
1394 \usrmth{dep}{-}{argfun}
1395 \usrmth{alt}{-}{argfun}

\cnf, \dnf, ... ...
1396 \cmdtxtabr{cnf}
1397 \cmdtxtabr{dnf}
1398 \cmdtxtabr{pnf}
1399 \cmdtxtabr{nnf}

1400 %** Semantics *****%

\LogStr, ... ...
1401 \newcommand{\logstr}{L}
1402 \usrmthlatupp{Log}{Str}{str}[\logstr]

\ValSet, ... ...
1403 \newcommand{\valsym}{\xi}
1404 \newcommand{\valset}{Val}
1405 \cmdmthsetext{Val}[\valset][\valsym]

\AsgSet, ... ...
1406 \newcommand{\asgsym}{\chi}
1407 \newcommand{\asgset}{Asg}
1408 \cmdmthsetext{Asg}[\asgset][\asgsym]

1409 %** First-Order Logics I *****%

\FOL, ... ...
1410 % First-Order Logic
1411 \cmdtxtoparname{FOL}[Fol]
1412 \cmdtxtoparname{FO}[FO]
1413
1414 % Monadic First-Order Logic
1415 \DeclareRobustCommand{\MFOL}
1416   {\{\txname{M}\}\FOL}
1417 \DeclareRobustCommand{\MFO}
1418   {\{\txname{M}\}\FO}

1419 %** Syntax *****%

```

```

\VarSig, ... ...
1420 \newcommand{\varsig}{V}
1421 \usrmthlatupp{Var}{Sig}{sig}[\varsig]
1422 \newcommand{\varsym}{x}
1423 \newcommand{\varset}{Vr}
1424 \cmdmthsetext{Var}[\varset][\varsym]
1425 \usrmth{var}{}{argfun}[vr]
1426 \cmdmthfun{dim}[dm]\usrmth{dim}{}{argfun}[dm]

\ConSig, ... ...
1427 \newcommand{\consig}{C}
1428 \usrmthlatupp{Con}{Sig}{sig}[\consig]
1429 \newcommand{\consym}{c}
1430 \newcommand{\conset}{Cn}
1431 \cmdmthsetext{Con}[\conset][\consym]
1432 \usrmth{con}{}{argfun}[cn]

\FunSig, ... ...
1433 \newcommand{\funsig}{F}
1434 \usrmthlatupp{Fun}{Sig}{sig}[\funsig]
1435 \newcommand{\funsym}{f}
1436 \newcommand{\funset}{Fn}
1437 \cmdmthsetext{Fun}[\funset][\funsym]
1438 \usrmth{fun}{}{argfun}[fn]
1439 \cmdmthfun{art}[ar]\usrmth{art}{}{argfun}[ar]

\TerSig, ... ...
1440 \newcommand{\tersig}{T}
1441 \usrmthlatupp{Ter}{Sig}{sig}[\tersig]
1442 \newcommand{\tersym}{t}
1443 \newcommand{\terset}{Tr}
1444 \cmdmthsetext{Ter}[\terset][\tersym]
1445 \usrmth{ter}{}{argfun}

\RelSig, ... ...
1446 \newcommand{\relsig}{R}
1447 \usrmthlatupp{Rel}{Sig}{sig}[\relsig]
1448 \newcommand{\relsym}{r}
1449 \newcommand{\relset}{Rl}
1450 \cmdmthsetext{Rel}[\relset][\relsym]
1451 \usrmth{rel}{}{argfun}[rl]

\skm ...
1452 \usrmth{skm}{}{argfun}

1453 %** Semantics *****%

\ConStr, ... ...
1454 \newcommand{\constr}{C}
1455 \usrmthlatupp{Con}{Str}{str}[\constr]

\FunStr, ... ...
1456 \newcommand{\funstr}{F}
1457 \usrmthlatupp{Fun}{Str}{str}[\funstr]

\TerStr, ... ...
1458 \newcommand{\terstr}{T}
1459 \usrmthlatupp{Ter}{Str}{str}[\terstr]

\RelStr, ... ...
1460 \newcommand{\relstr}{R}
1461 \usrmthlatupp{Rel}{Str}{str}[\relstr]

```

```

1462 %** First-Order Logics II *****%
\DF, \IF, ... ...
1463 % Dependence-Friendly Logic
1464 \cmdtxtoparname{DF}
1465
1466 % Independence-Friendly Logic
1467 \cmdtxtoparname{IF}
1468
1469 % Dependence/Independence-Friendly Logic
1470 \cmdtxtoparname{DIF}
1471
1472 % Dependence Logic
1473 \cmdtxtoparname{DL}
1474
1475 % Team Logic
1476 \cmdtxtoparname{TL}
1477
1478 % Alternating Dependence-Friendly Logic
1479 \cmdtxtoparname{ADF}
1480
1481 % Alternating Independence-Friendly Logic
1482 \cmdtxtoparname{AIF}
1483
1484 % Alternating Dependence/Independence-Friendly Logic
1485 \cmdtxtoparname{ADIF}
...
1486 %** Syntax *****%
\LEExs, \LAA11 ...
1487 \newcommand{\leexssym}{\Sigma}
1488 \usrmth{LEExs}{\luop}{\leexssym}
1489 \newcommand{\laallsym}{\Pi}
1490 \usrmth{LAA11}{\luop}{\laallsym}
1491 %** Semantics *****%
...
1492 %** Second-Order Logics I *****%
\SOL, ... ...
1493 % Second-Order Logic
1494 \cmdtxtoparname{SOL}[Sol]
1495 \cmdtxtoparname{SO}
1496
1497 % Weak Second-Order Logic
1498 \DeclareRobustCommand{\WSOL}
1499   {\{\txtname{W}\}\SOL}
1500 \DeclareRobustCommand{\WSO}
1501   {\{\txtname{W}\}\SO}
1502
1503 % coWeak Second-Order Logic
1504 \DeclareRobustCommand{\coWSOL}
1505   {\{\txtname{coW}\}\SOL}
1506 \DeclareRobustCommand{\coWSO}
1507   {\{\txtname{coW}\}\SO}
1508
1509 % Monadic Second-Order Logic
1510 \DeclareRobustCommand{\MSOL}
1511   {\{\txtname{M}\}\SOL}
1512 \DeclareRobustCommand{\MSO}
1513   {\{\txtname{M}\}\SO}

```

```

1514
1515 % Weak Monadic Second-Order Logic
1516 \DeclareRobustCommand{\WMSOL}
1517   {\txtname{W}}\MSOL}
1518 \DeclareRobustCommand{\WMSO}
1519   {\txtname{W}}\MSO}
1520
1521 % coWeak Monadic Second-Order Logic
1522 \DeclareRobustCommand{\coWMSOL}
1523   {\txtname{coW}}\MSOL}
1524 \DeclareRobustCommand{\coWMSO}
1525   {\txtname{coW}}\MSO}

1526 %** Syntax *****%

\FVarSet, ... ...
1527 \newcommand{\fvarsym}{x}
1528 \newcommand{\fvarset}{FVr}
1529 \cmdmthsettext{FVar}[\fvarset][\fvarsym]

\SVarSet, ... ...
1530 \newcommand{\svarsym}{X}
1531 \newcommand{\svarset}{SVr}
1532 \cmdmthsettext{SVar}[\svarset][\svarsym]

1533 %** Semantics *****%
...
1534 %** Second-Order Logics II *****%

\TL, \PL, ... ...
1535 % Tree Logic
1536 \cmdtxttoparname{TL}
1537
1538 % Weak Tree Logic
1539 \DeclareRobustCommand{\WTL}
1540   {\txtname{W}}\TL}
1541
1542 % coWeak Tree Logic
1543 \DeclareRobustCommand{\coWTL}
1544   {\txtname{coW}}\TL}
1545
1546 % Monadic Tree Logic
1547 \DeclareRobustCommand{\MTL}
1548   {\txtname{M}}\TL}
1549
1550 % Weak Monadic Tree Logic
1551 \DeclareRobustCommand{\WMTL}
1552   {\txtname{W}}\MTL}
1553
1554 % coWeak Monadic Tree Logic
1555 \DeclareRobustCommand{\coWMTL}
1556   {\txtname{coW}}\MTL}
1557
1558 % Path Logic
1559 \cmdtxttoparname{PL}
1560
1561 % Weak Path Logic
1562 \DeclareRobustCommand{\WPL}
1563   {\txtname{W}}\PL}
1564
1565 % coWeak Path Logic
1566 \DeclareRobustCommand{\coWPL}
1567   {\txtname{coW}}\PL}

```

```

1568
1569 % Monadic Path Logic
1570 \DeclareRobustCommand{\MPL}
1571   {\txtname{M}}\PL}
1572
1573 % Weak Monadic Path Logic
1574 \DeclareRobustCommand{\WMPL}
1575   {\txtname{W}}\MPL}
1576
1577 % coWeak Monadic Path Logic
1578 \DeclareRobustCommand{\coWMPL}
1579   {\txtname{coW}}\MPL}
1580 %** Syntax *****%
...
1581 %** Semantics *****%
...
1582 %** Modal Logics I *****%

```

\ML, \GML, ...

```

1583 % Modal Logic
1584 \cmdtxttoparname{ML}
1585
1586 % Graded Modal Logic
1587 \DeclareRobustCommand{\GML}
1588   {\txtname{G}}\ML}
1589
1590 % Quantified Modal Logic
1591 \DeclareRobustCommand{\QML}
1592   {\txtname{Q}}\ML}
1593 \DeclareRobustCommand{\EML}
1594   {\ensuremath{\exists}\ML}
1595 \DeclareRobustCommand{\UML}
1596   {\ensuremath{\forall}\ML}
1597 %** Syntax *****%

```

\Opr ...

```

1598 \usrmth{Opr}{\sym}[Op]

```

\DMod, \BMod ...

```

1599 \usrmth{DMod}{\sym}[\Diamond]
1600 \usrmth{BMod}{\sym}[\Box]

```

\Exs, \All ...

```

1601 \DeclareRobustCommand{\Exs}
1602   {\@ifstar{\@sexs}{\@exs}}
1603 \DeclareRobustCommand{\@sexs}[1]
1604   {\mth{\DMod}[#1]}
1605 \DeclareRobustCommand{\@exs}[1]
1606   {\mth{\defval{\argmid{\langle}{#1}{\rangle}}{\DMod}}}
1607 \DeclareRobustCommand{\All}
1608   {\@ifstar{\@sall}{\@all}}
1609 \DeclareRobustCommand{\@sall}[1]
1610   {\mth{\BMod}[#1]}
1611 \DeclareRobustCommand{\@all}[1]
1612   {\mth{\defval{\argmid{\left}[#1]{\right}}{\BMod}}}
1613 %** Semantics *****%

```

\KrpStr, ...

```

1614 \newcommand{\krpstr}{K}
1615 \usrmthlatupp{Krp}{Str}{str}[\krpstr]

```

```

\WrlSet, ... ...
1616 \newcommand{\wrlsym}{w}
1617 \newcommand{\wrlset}{W}
1618 \cmdmthsetext{Wrl}[\wrlset][\wrlsym]
1619 \cmdmthsymelm{iwrl}[\wrlsym_{I}]

\AccRel, \TrnRel ...
1620 \newcommand{\accsym}{R}
1621 \cmdmthrel{Acc}[\accsym]
1622 \cmdmthrel{Trn}[\accsym]

\labFun ...
1623 \newcommand{\labsym}{\lambda}
1624 \cmdmthfun{lab}[\labsym]

\PthSet, \pthFun ...
1625 \providecommand{\pthsym}{\pi}
1626 \providecommand{\pthset}{Pth}
1627 \cmdmthsetext{Pth}[\pthset][\pthsym]
1628 \cmdmthfun{pth}

1629 %** Modal Logics II *****%

\MC, \GMC, ... ...
1630 % Mu Calculus
1631 \cmdtxttoparname{MC}[\ensuremath{\mu}-Calculus]
1632
1633 % Graded Mu Calculus
1634 \DeclareRobustCommand{\GMC}
1635   {\{\textrname{G}\}\MC}
1636
1637 % Quantified Mu Calculus
1638 \DeclareRobustCommand{\QMC}
1639   {\{\textrname{Q}\}\MC}
1640 \DeclareRobustCommand{\EMC}
1641   {\ensuremath{\exists}\MC}
1642 \DeclareRobustCommand{\UMC}
1643   {\ensuremath{\forall}\MC}
1644
1645 % Alternation-Free Mu Calculus
1646 \DeclareRobustCommand{\AFMC}
1647   {\{\textrname{AF}\}\MC}
1648
1649 % Alternation-Free Graded Mu Calculus
1650 \DeclareRobustCommand{\AFGMC}
1651   {\{\textrname{AF}\}\GMC}
1652
1653 % Quantified Alternation-Free Mu Calculus
1654 \DeclareRobustCommand{\QAFMC}
1655   {\{\textrname{Q}\}\AFMC}
1656 \DeclareRobustCommand{\EAFMC}
1657   {\ensuremath{\exists}\AFMC}
1658 \DeclareRobustCommand{\UAFMC}
1659   {\ensuremath{\forall}\AFMC}
1660
1661 %** Syntax *****%
...
1662 %** Semantics *****%
...
1663 %** Temporal Logics I *****%

```

```

\PTL, \LTL, ... ...
1664 % Propositional Temporal Logic
1665 \cmdtxttoparname{PTL}
1666
1667 % Quantified Propositional Temporal Logic
1668 \DeclareRobustCommand{\QPTL}
1669   {\{\txtrname{Q}\}\PTL}
1670 \DeclareRobustCommand{\EPTL}
1671   {\ensuremath{\exists}\PTL}
1672 \DeclareRobustCommand{\UPTL}
1673   {\ensuremath{\forall}\PTL}
1674
1675 % Linear Temporal Logic
1676 \cmdtxttoparname{LTL}
1677
1678 % Quantified Linear Temporal Logic
1679 \DeclareRobustCommand{\QLTL}
1680   {\{\txtrname{Q}\}\LTL}
1681 \DeclareRobustCommand{\ELTL}
1682   {\ensuremath{\exists}\LTL}
1683 \DeclareRobustCommand{\ULTL}
1684   {\ensuremath{\forall}\LTL}
1685 %** Syntax *****%

\X, ... ...
1686 \usrmth{X}{-}{sym}[X\,]
1687 \usrmth{F}{-}{sym}[F\,]
1688 \usrmth{G}{-}{sym}[G\,]
1689 \usrmth{U}{-}{sym}[\,U\,]
1690 \usrmth{R}{-}{sym}[\,R\,]

\Y, ... ...
1691 \usrmth{Y}{-}{sym}[G\,]
1692 \usrmth{P}{-}{sym}[P\,]\let\SavePildcrow\P
1693 \usrmth{H}{-}{sym}[H\,]\let\SaveDoubleAcute\H
1694 \usrmth{S}{-}{sym}[\,S\,]\let\SaveSectionSymbol\S
1695 \usrmth{B}{-}{sym}[\,B\,]

1696 %** Semantics *****%

...

1697 %** Temporal Logics II *****%

\PDL, \CTL, ... ...
1698
1699 % Propositional Dynamic Logic
1700 \cmdtxttoparname{PDL}
1701
1702 % Computation Tree Logic
1703 \cmdtxttoparname{CTL}
1704
1705 % Weak Computation Tree Logic
1706 \DeclareRobustCommand{\WCTL}
1707   {\{\txtrname{W}\}\CTL}
1708
1709 % Quantified Computation Tree Logic
1710 \DeclareRobustCommand{\QCTL}
1711   {\{\txtrname{Q}\}\CTL}
1712 \DeclareRobustCommand{\ECTL}
1713   {\ensuremath{\exists}\CTL}
1714 \DeclareRobustCommand{\UCTL}
1715   {\ensuremath{\forall}\CTL}

```



```

1716
1717 % Improved Computation Tree Logic
1718 \cmdtxttoparname{CTLP}[CTL$^{+}$]
1719
1720 % Weak Improved Computation Tree Logic
1721 \DeclareRobustCommand{\WCTLP}
1722   {\{\txtrname{W}\}\CTLP}
1723
1724 % Quantified Improved Computation Tree Logic
1725 \DeclareRobustCommand{\QCTLP}
1726   {\{\txtrname{Q}\}\CTLP}
1727 \DeclareRobustCommand{\ECTLP}
1728   {\ensuremath{\exists}\CTLP}
1729 \DeclareRobustCommand{\UCTLP}
1730   {\ensuremath{\forall}\CTLP}
1731
1732 % Full Computation Tree Logic
1733 \cmdtxttoparname{CTLS}[CTL*]
1734
1735 % Weak Full Computation Tree Logic
1736 \DeclareRobustCommand{\WCTLS}
1737   {\{\txtrname{W}\}\CTLS}
1738
1739 % Quantified Full Computation Tree Logic
1740 \DeclareRobustCommand{\QCTLS}
1741   {\{\txtrname{Q}\}\CTLS}
1742 \DeclareRobustCommand{\ECTLS}
1743   {\ensuremath{\exists}\CTLS}
1744 \DeclareRobustCommand{\UCTLS}
1745   {\ensuremath{\forall}\CTLS}
1746 %** Syntax *****%

\E, \A ...
1747 \usrmth{E}{-}{sym}
1748 \usrmth{A}{-}{sym}

1749 %** Semantics *****%
...
1750 %** Strategic Logics I *****%

\ATL, ... ...
1751 % Alternating Temporal Logic
1752 \cmdtxttoparname{ATL}
1753
1754 % Weak Alternating Tree Logic
1755 \DeclareRobustCommand{\WATL}
1756   {\{\txtrname{W}\}\ATL}
1757
1758 % Quantified Alternating Temporal Logic
1759 \DeclareRobustCommand{\QATL}
1760   {\{\txtrname{Q}\}\ATL}
1761 \DeclareRobustCommand{\EATL}
1762   {\ensuremath{\exists}\ATL}
1763 \DeclareRobustCommand{\UATL}
1764   {\ensuremath{\forall}\ATL}
1765
1766 % Improved Alternating Temporal Logic
1767 \cmdtxttoparname{ATLP}[ATL$^{+}$]
1768
1769 % Weak Improved Alternating Tree Logic
1770 \DeclareRobustCommand{\WATLP}
1771   {\{\txtrname{W}\}\ATLP}

```

```

1772
1773 % Quantified Improved Alternating Temporal Logic
1774 \DeclareRobustCommand{\QATLP}
1775   {\textrname{Q}}\ATLP}
1776 \DeclareRobustCommand{\EATLP}
1777   {\ensuremath{\exists}\ATLP}
1778 \DeclareRobustCommand{\UATLP}
1779   {\ensuremath{\forall}\ATLP}
1780
1781 % Full Alternating Temporal Logic
1782 \cmdtxtopname{ATLS}[ATL*]
1783
1784 % Weak Full Alternating Tree Logic
1785 \DeclareRobustCommand{\WATLS}
1786   {\textrname{W}}\ATLS}
1787
1788 % Quantified Full Alternating Temporal Logic
1789 \DeclareRobustCommand{\QATLS}
1790   {\textrname{Q}}\ATLS}
1791 \DeclareRobustCommand{\EATLS}
1792   {\ensuremath{\exists}\ATLS}
1793 \DeclareRobustCommand{\UATLS}
1794   {\ensuremath{\forall}\ATLS}
1795 %** Syntax *****%

\EExs, \AA11 ...
1796 \DeclareRobustCommand{\EExs}[1]
1797   {\mth{\argmid{\langle!\rangle}{\defval{#1}{\emptyset}}{\rangle!\rangle}}
1798 \DeclareRobustCommand{\AA11}[1]
1799   {\mth{\argmid{\left[\left[{\defval{#1}{\emptyset}}{\right]\right]}}}

1800 %** Semantics *****%

\CGS ...
1801 \cmdtxtname{CGS}

\CGSStr, ... ...
1802 \newcommand{\cgsstr}{G}
1803 \usrmthlatupp{CGS}{Str}{str}[\cgsstr]

\AgnSet, ... ...
1804 \newcommand{\agnsym}{a}
1805 \newcommand{\agnset}{Ag}
1806 \cmdmthsetext{Agn}{\agnset}[\agnsym]

\PosSet, ... ...
1807 \providecommand{\possym}{v}
1808 \providecommand{\posset}{Ps}
1809 \cmdmthsetext{Pos}{\posset}[\possym]
1810 \cmdmthsymelm{ipos}[\possym_{I}]
1811 \cmdmthsymelm{fpos}[\possym_{F}]
1812 \cmdmthset{PPos}[\posset_{PlrSym}]
1813 \cmdmthsymelm{ppos}[\possym_{PlrSym}]
1814 \cmdmthset{OPos}[\posset_{OppSym}]
1815 \cmdmthsymelm{opos}[\possym_{OppSym}]

\SttSet, ... ...
1816 \newcommand{\sttsym}{s}
1817 \newcommand{\sttset}{St}
1818 \cmdmthsetext{Stt}{\sttset}[\sttsym]
1819 \cmdmthset{IStt}[\sttset_{I}]
1820 \cmdmthsymelm{istt}[\sttsym_{I}]
1821 \cmdmthset{FStt}[\sttset_{F}]
1822 \cmdmthsymelm{fstt}[\sttsym_{F}]

```

```

\ActSet, ... ...
1823 \newcommand{\actsym}{c}
1824 \newcommand{\actset}{Ac}
1825 \cmdmthsettext{Act}[\actset][\actsym]

\DecSet, ... ...
1826 \newcommand{\decsym}{d}
1827 \newcommand{\decset}{Dc}
1828 \cmdmthsettext{Dec}[\decset][\decsym]

\movFun ...
1829 \newcommand{\movsym}{\tau}
1830 \cmdmthfun{mov}[\movsym]

\HstSet, ... ...
1831 \providecommand{\hstsym}{\rho}
1832 \providecommand{\hstset}{Hst}
1833 \cmdmthsettext{Hst}[\hstset][\hstsym]
1834 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1835 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1836 \cmdmthset{OHst}[\hstset_{\OppSym}]
1837 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1838 \cmdmthfun{hst}

\PlaySet, \playFun ...
1839 \providecommand{\playsym}{\pi}
1840 \providecommand{\playset}{Play}
1841 \cmdmthsettext{Play}[\playset][\playsym]
1842 \cmdmthfun{play}

\StrSet, ... ...
1843 \providecommand{\strsym}{\sigma}
1844 \providecommand{\strset}{Str}
1845 \cmdmthsettext{Str}[\strset][\strsym]
1846 \cmdmthset{PStr}[\strset_{\PlrSym}]
1847 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1848 \cmdmthset{OStr}[\strset_{\OppSym}]
1849 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

\PrfSet, \prfFun ...
1850 \providecommand{\prfsym}{\xi}
1851 \providecommand{\prfset}{Prf}
1852 \cmdmthsettext{Prf}[\prfset][\prfsym]

1853 %** Strategic Logics II *****%

\SL, ... ...
1854 % Strategy Logic
1855 \cmdtxttoparname{SL}
1856
1857 \DeclareRobustCommand{\ESL}
1858   {\ensuremath{\exists}\SL}
1859 \DeclareRobustCommand{\USL}
1860   {\ensuremath{\forall}\SL}
1861
1862 \DeclareRobustCommand{\FSL}
1863   {\{\textname{F}\}\SL}
1864
1865 \DeclareRobustCommand{\EFSL}
1866   {\ensuremath{\exists}\FSL}
1867 \DeclareRobustCommand{\UFSL}
1868   {\ensuremath{\forall}\FSL}
1869

```

```

1870 % One-Goal Strategy Logic
1871 \DeclareRobustCommandx{\OGSL}[3][1=, 2=, 3=]
1872   {\SL[#1][#2][lg\arglef{,}{#3}]}
1873
1874 \DeclareRobustCommand{\EOGSL}
1875   {\ensuremath{\exists}\OGSL}
1876 \DeclareRobustCommand{\UOGSL}
1877   {\ensuremath{\forall}\OGSL}
1878
1879 \DeclareRobustCommand{\FOGSL}
1880   {\{\txname{F}\}\OGSL}
1881
1882 \DeclareRobustCommand{\EFOGSL}
1883   {\ensuremath{\exists}\FOGSL}
1884 \DeclareRobustCommand{\UFOGSL}
1885   {\ensuremath{\forall}\FOGSL}
1886
1887 % Conjunctive-Goal Strategy Logic
1888 \DeclareRobustCommandx{\CGSL}[3][1=, 2=, 3=]
1889   {\SL[#1][#2][cg\arglef{,}{#3}]}
1890
1891 \DeclareRobustCommand{\ECGSL}
1892   {\ensuremath{\exists}\CGSL}
1893 \DeclareRobustCommand{\UCGSL}
1894   {\ensuremath{\forall}\CGSL}
1895
1896 \DeclareRobustCommand{\FCGSL}
1897   {\{\txname{F}\}\CGSL}
1898
1899 \DeclareRobustCommand{\EFCGSL}
1900   {\ensuremath{\exists}\FCGSL}
1901 \DeclareRobustCommand{\UFCGSL}
1902   {\ensuremath{\forall}\FCGSL}
1903
1904 % Disjunctive-Goal Strategy Logic
1905 \DeclareRobustCommandx{\DGS}[3][1=, 2=, 3=]
1906   {\SL[#1][#2][dg\arglef{,}{#3}]}
1907
1908 \DeclareRobustCommand{\EDGS}
1909   {\ensuremath{\exists}\DGS}
1910 \DeclareRobustCommand{\UDGS}
1911   {\ensuremath{\forall}\DGS}
1912
1913 \DeclareRobustCommand{\FDGS}
1914   {\{\txname{F}\}\DGS}
1915
1916 \DeclareRobustCommand{\EFDGS}
1917   {\ensuremath{\exists}\FDGS}
1918 \DeclareRobustCommand{\UFDGS}
1919   {\ensuremath{\forall}\FDGS}
1920
1921 % Alternating-Goal Strategy Logic
1922 \DeclareRobustCommandx{\AGSL}[3][1=, 2=, 3=]
1923   {\SL[#1][#2][ag\arglef{,}{#3}]}
1924
1925 \DeclareRobustCommand{\EAGSL}
1926   {\ensuremath{\exists}\AGSL}
1927 \DeclareRobustCommand{\UAGSL}
1928   {\ensuremath{\forall}\AGSL}
1929
1930 \DeclareRobustCommand{\FAGSL}
1931   {\{\txname{F}\}\AGSL}
1932

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```

1933 \DeclareRobustCommand{\EFAGSL}
1934   {\ensuremath{\exists}\FAGSL}
1935 \DeclareRobustCommand{\UFAGSL}
1936   {\ensuremath{\forall}\FAGSL}
1937
1938 % Extended-Goal Strategy Logic
1939 \DeclareRobustCommandx{\EGSL}[3][1=, 2=, 3=]
1940   {\SL[#1][#2][eg\arglef{,}{#3}]}
1941
1942 \DeclareRobustCommand{\EEGSL}
1943   {\ensuremath{\exists}\EGSL}
1944 \DeclareRobustCommand{\UEGSL}
1945   {\ensuremath{\forall}\EGSL}
1946
1947 \DeclareRobustCommand{\FEGSL}
1948   {\{\txtname{F}\}\xGSL}
1949
1950 \DeclareRobustCommand{\EFEGSL}
1951   {\ensuremath{\exists}\FEGSL}
1952 \DeclareRobustCommand{\UFEGSL}
1953   {\ensuremath{\forall}\FEGSL}
1954
1955 % Boolean-Goal Strategy Logic
1956 \DeclareRobustCommandx{\BGSL}[3][1=, 2=, 3=]
1957   {\SL[#1][#2][bg\arglef{,}{#3}]}
1958
1959 \DeclareRobustCommand{\EBGSL}
1960   {\ensuremath{\exists}\BGSL}
1961 \DeclareRobustCommand{\UBGSL}
1962   {\ensuremath{\forall}\BGSL}
1963
1964 \DeclareRobustCommand{\FBGSL}
1965   {\{\txtname{F}\}\xGSL}
1966
1967 \DeclareRobustCommand{\EFBGSL}
1968   {\ensuremath{\exists}\FBGSL}
1969 \DeclareRobustCommand{\UFBGSL}
1970   {\ensuremath{\forall}\FBGSL}
1971
1972 % Nested-Goal Strategy Logic
1973 \DeclareRobustCommandx{\NGSL}[3][1=, 2=, 3=]
1974   {\SL[#1][#2][ng\arglef{,}{#3}]}
1975
1976 \DeclareRobustCommand{\ENGSL}
1977   {\ensuremath{\exists}\NGSL}
1978 \DeclareRobustCommand{\UNGSL}
1979   {\ensuremath{\forall}\NGSL}
1980
1981 \DeclareRobustCommand{\FNGSL}
1982   {\{\txtname{F}\}\xGSL}
1983
1984 \DeclareRobustCommand{\EFNGSL}
1985   {\ensuremath{\exists}\FNGSL}
1986 \DeclareRobustCommand{\UFNGSL}
1987   {\ensuremath{\forall}\FNGSL}
1988
1989 % Undefined-Goal Strategy Logic
1990 \DeclareRobustCommandx{\XGSL}[3][1=, 2=, 3=]
1991   {\SL[#1][#2][xg\arglef{,}{#3}]}
1992
1993 \DeclareRobustCommand{\EXGSL}
1994   {\ensuremath{\exists}\XGSL}
1995 \DeclareRobustCommand{\UXGSL}

```

```

1996   {\ensuremath{\forall}\XGSL}
1997
1998 \DeclareRobustCommand{\FXGSL}
1999   {\txtname{F}}\XGSL}
2000
2001 \DeclareRobustCommand{\EFXGSL}
2002   {\ensuremath{\exists}\FXGSL}
2003 \DeclareRobustCommand{\UFXGSL}
2004   {\ensuremath{\forall}\FXGSL}

2005 %** Syntax *****%%

\BndSet, ... ...
2006 \newcommand{\bndsym}{\flat}
2007 \newcommand{\bndset}{\Bn}
2008 \cmdmthsetext{Bnd}[\bndset][\bndsym]
2009 \usrmth{bnd}{\}{argfun}

\psn ...
2010 \usrmth{psn}{\}{argfun}

2011 %** Semantics *****%%

\nxtFun ...
2012 \newcommand{\nxtfun}{nxt}
2013 \cmdmthfun{nxt}[\nxtfun]

2014 \fi
2015 %*****%%
2016 %*****%%
2017 %** Macros for Automata *****%%
2018 %*****%%
2019 \ifaut@
2020 %** Finite Word Automata *****%%

\DFA, ... ...
2021 \cmdtxtoparname{DFA}\cmdtxtoparname{NFA}\cmdtxtoparname{UFA}\cmdtxtoparname{AFA}
2022
2023 \cmdtxtoparname{DWA}\cmdtxtoparname{NWA}\cmdtxtoparname{UWA}\cmdtxtoparname{AWA}
2024
2025 \cmdtxtoparname{DFW}\cmdtxtoparname{NFW}\cmdtxtoparname{UFW}\cmdtxtoparname{AFW}
2026 \cmdtxtoparname{DWW}\cmdtxtoparname{NWW}\cmdtxtoparname{UWW}\cmdtxtoparname{AWW}
2027 \cmdtxtoparname{DBW}\cmdtxtoparname{NBW}\cmdtxtoparname{UBW}\cmdtxtoparname{ABW}
2028 \cmdtxtoparname{DCW}\cmdtxtoparname{NCW}\cmdtxtoparname{UCW}\cmdtxtoparname{ACW}
2029 \cmdtxtoparname{DPW}\cmdtxtoparname{NPW}\cmdtxtoparname{UPW}\cmdtxtoparname{APW}
2030 \cmdtxtoparname{DRW}\cmdtxtoparname{NRW}\cmdtxtoparname{URW}\cmdtxtoparname{ARW}
2031 \cmdtxtoparname{DSW}\cmdtxtoparname{NSW}\cmdtxtoparname{USW}\cmdtxtoparname{ASW}
2032 \cmdtxtoparname{DMW}\cmdtxtoparname{NMW}\cmdtxtoparname{UMW}\cmdtxtoparname{AMW}

\GFG, ... ...
2033 \cmdtxtoparname{GFG}
2034
2035 \cmdtxtoparname{PD}
2036 \cmdtxtoparname{PN}
2037
2038 \cmdtxtoparname{LD}
2039 \cmdtxtoparname{LN}

2040 %** Syntax *****%%

\AutName, ... ...
2041 \newcommand{\autname}{A}
2042 \usrmthlatupp{Aut}{Name}{name}[\autname]
2043 \newcommand{\autset}{Aut}
2044 \cmdmthset{Aut}[\autset]

```

```

\WAutSet ...
2045 \newcommand{\wautset}{\WAut}
2046 \cmdmthset{WAut}[\wautset]

\SttSet, ... ...
2047 \def\sttsym{q}
2048 \def\sttset{Q}
2049 \cmdmthsetext{Stt}[\sttset][\sttsym]
2050 \cmdmthset{IStt}[\sttset_{I}]
2051 \cmdmthsymelm{istt}[\sttsym_{I}]
2052 \cmdmthset{FStt}[\sttset_{F}]
2053 \cmdmthsymelm{fstt}[\sttsym_{F}]

\SymSet, ... ...
2054 \newcommand{\symsym}{\sigma}
2055 \newcommand{\symset}{\Sigma}
2056 \cmdmthsetext{Sym}[\symset][\symsym]

\trnFun ...
2057 \newcommand{\trnsym}{\delta}
2058 \cmdmthfun{trn}[\trnsym]

2059 %** Semantics *****%%

\LangFun ...
2060 \newcommand{\langfun}{L}
2061 \cmdmthfun{Lang}[\langfun]

\WrdSet, ... ...
2062 \newcommand{\wrdsym}{w}
2063 \newcommand{\wrdset}{Wr}
2064 \cmdmthsetext{Wrd}[\wrdset][\wrdsym]

2065 %** Finite Tree Automata *****%%

\DTA, ... ...
2066 \cmdtxtoparname{DTA}\cmdtxtoparname{NTA}\cmdtxtoparname{UTA}\cmdtxtoparname{ATA}
2067
2068 \cmdtxtoparname{DFT}\cmdtxtoparname{NFT}\cmdtxtoparname{UFT}\cmdtxtoparname{AFT}
2069 \cmdtxtoparname{DWT}\cmdtxtoparname{NWT}\cmdtxtoparname{UWT}\cmdtxtoparname{AWT}
2070 \cmdtxtoparname{DBT}\cmdtxtoparname{NBT}\cmdtxtoparname{UBT}\cmdtxtoparname{ABT}
2071 \cmdtxtoparname{DCT}\cmdtxtoparname{NCT}\cmdtxtoparname{UCT}\cmdtxtoparname{ACT}
2072 \cmdtxtoparname{DPT}\cmdtxtoparname{NPT}\cmdtxtoparname{UPT}\cmdtxtoparname{APT}
2073 \cmdtxtoparname{DRT}\cmdtxtoparname{NRT}\cmdtxtoparname{URT}\cmdtxtoparname{ART}
2074 \cmdtxtoparname{DST}\cmdtxtoparname{NST}\cmdtxtoparname{UST}\cmdtxtoparname{AST}
2075 \cmdtxtoparname{DMT}\cmdtxtoparname{NMT}\cmdtxtoparname{UMT}\cmdtxtoparname{AMT}

2076 %** Syntax *****%%

\TAutSet ...
2077 \newcommand{\tautset}{\TAut}
2078 \cmdmthset{TAut}[\tautset]

\DirSet, ... ...
2079 \newcommand{\dirsym}{d}
2080 \newcommand{\dirset}{\Lambda}
2081 \cmdmthsetext{Dir}[\dirset][\dirsym]

2082 %** Semantics *****%%

\TreeSet, ... ...
2083 \newcommand{\treesym}{T}
2084 \newcommand{\treeset}{Tr}
2085 \cmdmthsetext{Tree}[\treeset][\treesym]

```

```

\wotFun ...
2086 \newcommand{\wotfun}{\wot}
2087 \cmdmthfun{\wot}[\wotfun]

2088 \fi
2089 %%%
2090 %%%
2091 %** Format Tricks %%%
2092 %%%
2093 \iffirm@

... ..
2094 %...

2095 \fi
2096 %%%
2097 %%%
2098 %** Figure Tricks %%%
2099 %%%
2100 \iffig@

2101 \RequirePackage{tikz}
2102 \usetikzlibrary{arrows,graphs,matrix,patterns,shapes}

2103 \tikzstyle{every node} =
2104   [draw = none, fill = none, black, thin]
2105 \tikzstyle{every edge} +=
2106   [black, thick]

2107 \tikzstyle{noall} =
2108   [draw = none, fill = none]
2109 \tikzstyle{nodraw} =
2110   [draw = none, fill = white]
2111 \tikzstyle{nofill} =
2112   [draw = black, fill = none]

2113 \ifwrpfig@
2114   % Wrapfig Package
2115   \RequirePackage{wrapfig}
2116 \fi

2117 \fi
2118 %%%
2119 %%%
2120 %** Table Tricks %%%
2121 %%%
2122 \iftab@

... ..
2123 %...

2124 \fi
2125 %%%
2126 %%%
2127 %** Algorithm Tricks %%%
2128 %%%
2129 \ifalg@

2130 \RequirePackage[ruled,vlined]{algorithm2e}
2131 \DontPrintSemicolon
2132 \SetInd{0.25em}{0.5em}
2133 \setlength{\algomargin}{1.25em}

\Signature ...
2134 \SetKw{Signature}{signature}

```



```

\Macro, ... ...
2135 \SetKwFor{Macro}{macro}{}{}
2136 \SetKwFor{Function}{function}{}{}
2137 \SetKwFor{Procedure}{procedure}{}{}

\Let ...
2138 \SetKwFor{Let}{let}{in}{}

\True, \False ...
2139 \SetKw{True}{true}
2140 \SetKw{False}{false}

\From, ... ...
2141 \SetKw{From}{from}
2142 \SetKw{To}{to}
2143 \SetKw{DownTo}{downto}

\GoTo, ... ...
2144 \SetKw{GoTo}{goto}
2145 \SetKw{Break}{break}
2146 \SetKw{Continue}{continue}

\MIf, ... ...
2147 \SetKwIF{MIf}{MElseIf}{MElse}{\#if}{\#then}{\#else \#if}{\#else}{\#endif}

\nlr ...
2148 \DeclareRobustCommand{\nlr}[1]
2149   {\addtocounter{AlgoLine}{1}%
2150   \nlset{\arabic{AlgoLine}-\addtocounter{AlgoLine}{#1}\arabic{AlgoLine}}}

2151 \fi
2152 %%*****%
2153 \endinput
2154 \</package>

```

## 2 Change History

|       |                                                    |       |                                                               |
|-------|----------------------------------------------------|-------|---------------------------------------------------------------|
| v0.0  | General: First public release . . . . . 1          | v0.19 | General: Additional starred variants . . . . . 1              |
| v0.1  | General: Algorithm tricks . . . . . 1              | v0.2  | General: Changes in ‘Auxiliary tricks’ . . . . . 1            |
| v0.10 | General: Small refinements . . . . . 1             | v0.3  | General: Few problems solved . . . . . 1                      |
| v0.11 | General: Few additions and corrections . . . . . 1 | v0.4  | General: Refactoring, corrections, and extensions . . . . . 1 |
| v0.12 | General: New starred variants . . . . . 1          | v0.5  | General: Figure tricks . . . . . 1                            |
| v0.13 | General: Further starred variants . . . . . 1      | v0.6  | General: Small refinements . . . . . 1                        |
| v0.14 | General: Few additions and corrections . . . . . 1 | v0.7  | General: Refinements, corrections, and extensions . . . . . 1 |
| v0.15 | General: Refactoring of dtx sources . . . . . 1    | v0.8  | General: Few refinements and corrections . . . 1              |
| v0.16 | General: Small refinements and few additions 1     | v0.9  | General: Small addition to ‘Algorithm tricks’ 1               |
| v0.17 | General: Few additions . . . . . 1                 |       |                                                               |
| v0.18 | General: Few new starred variants . . . . . 1      |       |                                                               |

## 3 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

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|                    |                                                                              |                                                   |                                                                                                                                                         |                    |                                                            |
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|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |                                             |                                  |                                                                                                                                                                   |
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| <code>\valsym</code> .....       | <a href="#">1403</a> , <a href="#">1405</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <code>\WATL</code> .....            | <a href="#">1755</a>                        | <code>\WrlSet,□...</code> .....  | <a href="#">1616</a>                                                                                                                                              |
| <code>\varcmd</code> .....       | <a href="#">161</a> ,<br><a href="#">924</a> , <a href="#">925</a> , <a href="#">928</a> , <a href="#">929</a> , <a href="#">932</a> ,<br><a href="#">933</a> , <a href="#">936</a> , <a href="#">937</a> , <a href="#">940</a> , <a href="#">941</a> ,<br><a href="#">944</a> , <a href="#">945</a> , <a href="#">948</a> , <a href="#">949</a> , <a href="#">952</a> ,<br><a href="#">953</a> , <a href="#">956</a> , <a href="#">957</a> , <a href="#">960</a> , <a href="#">961</a> ,<br><a href="#">964</a> , <a href="#">965</a> , <a href="#">968</a> , <a href="#">969</a> , <a href="#">972</a> , <a href="#">973</a> | <code>\WATLP</code> .....           | <a href="#">1770</a>                        | <code>\wrlsym</code> .....       | <a href="#">1616</a> , <a href="#">1618</a> , <a href="#">1619</a>                                                                                                |
| <code>\varepsilon</code> .....   | <a href="#">1130</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <code>\WATLS</code> .....           | <a href="#">1785</a>                        | <code>\wrpfig@false</code> ..... | <a href="#">111</a>                                                                                                                                               |
| <code>\varnothing</code> .....   | <a href="#">1009</a> , <a href="#">1024</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <code>\WAutSet</code> .....         | <a href="#">2045</a>                        | <code>\wrpfig@true</code> .....  | <a href="#">110</a>                                                                                                                                               |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\wautset</code> .....         | <a href="#">2045</a> , <a href="#">2046</a> | <code>\wrt</code> .....          | <a href="#">861</a>                                                                                                                                               |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\WCTL</code> .....            | <a href="#">1706</a>                        | <code>\WSO</code> .....          | <a href="#">1500</a>                                                                                                                                              |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\WCTLP</code> .....           | <a href="#">1721</a>                        | <code>\WSOL</code> .....         | <a href="#">1498</a>                                                                                                                                              |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\WCTLS</code> .....           | <a href="#">1736</a>                        | <code>\WTL</code> .....          | <a href="#">1539</a>                                                                                                                                              |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\wghset</code> .....          | <a href="#">1335</a> , <a href="#">1336</a> | <b>X</b>                         |                                                                                                                                                                   |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\WghSet,□\wghFun</code> ..... | <a href="#">1334</a>                        |                                  |                                                                                                                                                                   |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\wghsym</code> .....          | <a href="#">1334</a> , <a href="#">1336</a> | <code>\X,□...</code> .....       | <a href="#">1686</a>                                                                                                                                              |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\WH</code> .....              | <a href="#">1186</a>                        | <code>\XGSL</code> .....         | <a href="#">1990</a> , <a href="#">1994</a> , <a href="#">1996</a>                                                                                                |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\widehat</code> .....         | <a href="#">914</a>                         | <code>\xGSL</code> .....         | <a href="#">1897</a> , <a href="#">1914</a> , <a href="#">1931</a> ,<br><a href="#">1948</a> , <a href="#">1965</a> , <a href="#">1982</a> , <a href="#">1999</a> |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\widetilde</code> .....       | <a href="#">916</a>                         | <code>\xi</code> .....           | <a href="#">1269</a> , <a href="#">1403</a> , <a href="#">1850</a>                                                                                                |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\WinSet</code> .....          | <a href="#">1240</a>                        | <code>\xspace</code> .....       | <a href="#">296</a> , <a href="#">298</a>                                                                                                                         |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\winset</code> .....          | <a href="#">1240</a> , <a href="#">1241</a> | <b>Y</b>                         |                                                                                                                                                                   |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\Wlogx</code> .....           | <a href="#">865</a>                         |                                  |                                                                                                                                                                   |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <code>\wlogx</code> .....           | <a href="#">862</a>                         | <code>\Y,□...</code> .....       | <a href="#">1691</a>                                                                                                                                              |