

fmocdmac — FM's OCD L^AT_EX Macro*

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Released 2023/07/29

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
```

*This document describes version v0.20 of the fmocdmac package, last revised 2023/07/29.

```

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\iffirm@ \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:** $\empchk{\langle A \rangle}{\langle B \rangle}$ 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 \iflinnu@
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^{sub}Ext1(Arg)Ext2”
- \newtxtarg[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtarg[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtarg*[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtarg*[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtarg*[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}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^{sub}Ext1(Arg)Ext2”
- \newtxtargsty{\rmfamily}[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtargsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtargsty*{\rmfamily}{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtargsty*{\rmfamily}[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}Ext1(Arg)Ext2”
- \newtxtargsty*{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “Name^{sub}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^{sub}(Arg)”
- \newtxtoarg[\sffamily]{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoarg[\ttfamily]{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoarg*[\rmfamily]{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoarg*[\sffamily]{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoarg*[\ttfamily]{Name}[sub][sup][Arg] = “Name^{sub}(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^{sub}(Arg)”
- \newtxtoargsty{\rmfamily}[\sffamily]{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoargsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoargsty*{\rmfamily}{Name}[sub][sup][Arg] = “Name^{sub}(Arg)”
- \newtxtoargsty*{\rmfamily}[\sffamily]{Name}[sub][sup][Arg] = “Name^{sub}(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}}

```

$\texttt{\textbackslash txtarg}$... 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}}

```

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

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

```

360 \newcommand{\txttoarg}
361   {\@ifstar{\newtxttoargsty}{\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}_{sub}Ext”
- \newmthsty{\mathsf}{Name}[sub][sup][Ext] = “Name^{sup}_{sub}Ext”
- \newmthsty{\mathtt}{Name}[sub][sup][Ext] = “Name^{sup}_{sub}Ext”
- \newmthsty*{\mathrm}{Name}[sub][sup][Ext] = “Name^{sup}_{sub}Ext”
- \newmthsty*{\mathsf}{Name}[sub][sup][Ext] = “Name^{sup}_{sub}Ext”
- \newmthsty*{\mathtt}{Name}[sub][sup][Ext] = “Name^{sup}_{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}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmtharg{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmtharg{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmtharg*{\mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmtharg*{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmtharg*{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})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}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmthargsty{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmthargsty{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmthargsty*{\mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmthargsty*{\mathsf}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2”
- \newmthargsty*{\mathtt}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = “Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})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}_{sub}(Arg^{Ex^{Ex}})”

- ```

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

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

$$\text{\mthNewCmd{Name}[sub][sup][Ext]} = \text{Name}_{sub}^{sup} Ext$$

$$\text{\mthNewCmd*{Name}[sub][sup][Ext]} = \text{Name}_{sub}^{sup} Ext$$

```

482 \newcommand{\cmdmth}[1]
483 {\csdef{mth#1}%
484 {\@ifstar{\newmthsty*{mthsty#1}}{\newmthsty{mthsty#1}}}}

```

`\cmdmtharg` ... to do!

- `\cmdmtharg{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};`  

$$\text{\mthargNewCmd{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 \left( Arg^{Ex^{Ex}} \right) Ext2$$

$$\text{\mthargNewCmd*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 (Arg^{Ex^{Ex}}) Ext2$$

```

485 \newcommand{\cmdmtharg}[1]
486 {\csdef{mtharg#1}%
487 {\@ifstar{\newmthargsty*{mthsty#1}}{\newmthargsty{mthsty#1}}}}

```

`\cmdmthoarg` ... to do!

- `\cmdmthoarg{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};`  

$$\text{\mthoargNewCmd{Name}[sub][sup][Arg^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} \left( Arg^{Ex^{Ex}} \right)$$

$$\text{\mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} (Arg^{Ex^{Ex}})$$

```

488 \newcommand{\cmdmthoarg}[1]
489 {\csdef{mthoarg#1}%
490 {\@ifstar{\newmthoargsty*{mthsty#1}}{\newmthoargsty{mthsty#1}}}}

```

`\cmdmthpar` ... to do!

- `\cmdmthpar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};`  

$$\text{\mthparNewCmd{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 \left[ Par^{Ex^{Ex}} \right] Ext2$$

$$\text{\mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 [Par^{Ex^{Ex}}] Ext2$$

```

491 \newcommand{\cmdmthpar}[1]
492 {\csdef{mthpar#1}%
493 {\@ifstar{\newmthparsty*{mthsty#1}}{\newmthparsty{mthsty#1}}}}

```

`\cmdmthopar` ... to do!

- `\cmdmthopar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};`  

$$\text{\mthoparNewCmd{Name}[sub][sup][Par^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} \left[ Par^{Ex^{Ex}} \right]$$

$$\text{\mthoparNewCmd*{Name}[sub][sup][Par^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} [Par^{Ex^{Ex}}]$$

```

494 \newcommand{\cmdmthopar}[1]
495 {\csdef{mthopar#1}%
496 {\@ifstar{\newmthoparsty*{mthsty#1}}{\newmthoparsty{mthsty#1}}}}

```

`\cmdmthall` ... to do!

- `\cmdmthall{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};`  

$$\text{\mthNewCmd{Name}[sub][sup][Ext]} = \text{Name}_{sub}^{sup} Ext$$

$$\text{\mthargNewCmd{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 \left( Arg^{Ex^{Ex}} \right) Ext2$$

$$\text{\mthargNewCmd*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 (Arg^{Ex^{Ex}}) Ext2$$

$$\text{\mthoargNewCmd{Name}[sub][sup][Arg^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} \left( Arg^{Ex^{Ex}} \right)$$

$$\text{\mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} (Arg^{Ex^{Ex}})$$

$$\text{\mthparNewCmd{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 \left[ Par^{Ex^{Ex}} \right] Ext2$$

$$\text{\mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]} = \text{Name}_{sub}^{sup} Ext1 [Par^{Ex^{Ex}}] Ext2$$

$$\text{\mthoparNewCmd{Name}[sub][sup][Par^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} \left[ Par^{Ex^{Ex}} \right]$$

$$\text{\mthoparNewCmd*{Name}[sub][sup][Par^{Ex^{Ex}}]} = \text{Name}_{sub}^{sup} [Par^{Ex^{Ex}}]$$

```

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^{Ex^{Ex}}} = cmdName(Arg^{Ex^{Ex}})
 \cmdNameSuf*{Arg^{Ex^{Ex}}} = cmdName(Arg^{Ex^{Ex}})
 \usrmth{cmdName}{Suf}{par};
 \cmdNameSuf{Par^{Ex^{Ex}}} = cmdName[Par^{Ex^{Ex}}]
 \cmdNameSuf*{Par^{Ex^{Ex}}} = cmdName[Par^{Ex^{Ex}}]
 • \usrmth{cmdName}{Suf}{}[newName];
 \cmdNameSuf = newName
 \cmdNameSuf* = newName
 \usrmth{cmdName}{Suf}{arg}[newName];
 \cmdNameSuf{Arg^{Ex^{Ex}}} = newName(Arg^{Ex^{Ex}})
 \cmdNameSuf*{Arg^{Ex^{Ex}}} = newName(Arg^{Ex^{Ex}})
 \usrmth{cmdName}{Suf}{par}[newName];
 \cmdNameSuf{Par^{Ex^{Ex}}} = newName[Par^{Ex^{Ex}}]
 \cmdNameSuf*{Par^{Ex^{Ex}}} = newName[Par^{Ex^{Ex}}]
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@

\txtdf, to do!
 • \txtdf{Name}[sub][sup][Ext] = $Name_{sub}^{sup}Ext$
 • \txtargdf{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!

```

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

541 %% Style for Abbreviations

542 \cmdtxtall{abr}\newcommand{\txtstyabr}{\em}

\cmdtxtabr ... to do!

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

543 \newcommandx{\cmdtxtabr}[2][2=]

544 {\usrtxt{#1}{-}{abr}{#2}}

\cmdtxtargabr ... to do!

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

545 \newcommandx{\cmdtxtargabr}[2][2=]

546 {\usrtxt{#1}{-}{argabr}{#2}}

\cmdtxtoargabr ... to do!

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

547 \newcommandx{\cmdtxtoargabr}[2][2=]

548 {\usrtxt{#1}{-}{oargabr}{#2}}

\cmdtxtparabr ... to do!

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

549 \newcommandx{\cmdtxtparabr}[2][2=]

550 {\usrtxt{#1}{-}{parabr}{#2}}

\cmdtxtoparabr ... to do!

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

551 \newcommandx{\cmdtxtoparabr}[2][2=]

552 {\usrtxt{#1}{-}{oparabr}{#2}}

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

\txtname, ... to do!

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

554 %% Style for Names

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

\cmdtxtname ... to do!

- `\cmdtxtname{cmdName};`  
`\cmdName[sub][sub][ext] = CMDNAMESUBSUBEXT`
- `\cmdtxtname{cmdName}[newName];`  
`\cmdName[sub][sub][ext] = NEWNAMESUBSUBEXT`

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

`\cmdtxtargname` ... to do!

- `\cmdtxtargname{cmdName};`  
`\cmdName[sub][sub][ext1]{arg}[ext2] = CMDNAMESUBSUBEXT1(ARG)EXT2`
- `\cmdtxtargname{cmdName}[newName];`  
`\cmdName[sub][sub][ext1]{arg}[ext2] = NEWNAMESUBSUBEXT1(ARG)EXT2`

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

`\cmdtxtoargname` ... to do!

- `\cmdtxtoargname{cmdName};`  
`\cmdName[sub][sub][arg] = CMDNAMESUBSUB(ARG)`
- `\cmdtxtoargname{cmdName}[newName];`  
`\cmdName[sub][sub][arg] = NEWNAMESUBSUB(ARG)`

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

`\cmdtxtparname` ... to do!

- `\cmdtxtparname{cmdName};`  
`\cmdName[sub][sub][ext1]{par}[ext2] = CMDNAMESUBSUBEXT1[PAR]EXT2`
- `\cmdtxtparname{cmdName}[newName];`  
`\cmdName[sub][sub][ext1]{par}[ext2] = NEWNAMESUBSUBEXT1[PAR]EXT2`

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

`\cmdtxtoparname` ... to do!

- `\cmdtxtoparname{cmdName};`  
`\cmdName[sub][sub][par] = CMDNAMESUBSUB[PAR]`
- `\cmdtxtoparname{cmdName}[newName];`  
`\cmdName[sub][sub][par] = NEWNAMESUBSUB[PAR]`

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

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

- `\txtcom{Name}[sub][sup][Ext] = NAMESUPSUBEXT`
- `\txtargcom{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAMESUPSUBEXT1(ARG)EXT2`
- `\txtparcom{Name}[sub][sup][Ext1]{Par}[Ext2] = NAMESUPSUBEXT1[PAR]EXT2`

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

`\cmdtxtcom` ... to do!

- `\cmdtxtcom{cmdName};`  
`\cmdName[sub][sub][ext] = CMDNAMESUBSUBEXT`
- `\cmdtxtcom{cmdName}[newName];`  
`\cmdName[sub][sub][ext] = NEWNAMESUBSUBEXT`

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

`\cmdtxtargcom` ... to do!

- `\cmdtxtargcom{cmdName};`  
`\cmdName[sub][sub][ext1]{arg}[ext2] = CMDNAMESUBSUBEXT1(ARG)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] = $\mathcal{NAME}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
 • \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] = $\mathcal{NAME}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$
584 % Style for Names
585 \cmdmthall{name}\newcommand{\mthstynome}{\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]}

```

```

\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] = $\mathcal{CMDNAME}\mathcal{E}_{sub}^{sub}ext$
 • \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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- $\backslash\text{cmdmthargfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \mathcal{C}\mathcal{M}\mathcal{D}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$
- $\backslash\text{cmdmthargfam}\{\text{cmdName}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdNameFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \mathcal{N}\mathcal{E}\mathcal{W}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$

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

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

- $\backslash\text{cmdmthoargfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{arg}] = \mathcal{C}\mathcal{M}\mathcal{D}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}(\text{arg})$
- $\backslash\text{cmdmthoargfam}\{\text{cmdFam}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdFamFam}[\text{sub}][\text{sub}][\text{arg}] = \mathcal{N}\mathcal{E}\mathcal{W}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}(\text{arg})$

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

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

- $\backslash\text{cmdmthparfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \mathcal{C}\mathcal{M}\mathcal{D}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$
- $\backslash\text{cmdmthparfam}\{\text{cmdName}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdNameFam}[\text{sub}][\text{sub}][\text{ext1}]\{\text{par}\}[\text{ext2}] = \mathcal{N}\mathcal{E}\mathcal{W}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext1}[\text{par}]\text{ext2}$

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

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

- $\backslash\text{cmdmthoparfam}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMEFam}[\text{sub}][\text{sub}][\text{par}] = \mathcal{C}\mathcal{M}\mathcal{D}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}[\text{par}]$
- $\backslash\text{cmdmthoparfam}\{\text{cmdFam}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdFamFam}[\text{sub}][\text{sub}][\text{par}] = \mathcal{N}\mathcal{E}\mathcal{W}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}[\text{par}]$

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

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

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

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!

- $\backslash\text{cmdmthcls}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMECls}[\text{sub}][\text{sub}][\text{ext}] = \mathcal{C}\mathcal{M}\mathcal{D}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext}$
- $\backslash\text{cmdmthcls}\{\text{cmdName}\}[\text{NEWNAME}];$   
 $\backslash\text{cmdNameCls}[\text{sub}][\text{sub}][\text{ext}] = \mathcal{N}\mathcal{E}\mathcal{W}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext}$

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

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

- $\backslash\text{cmdmthargcls}\{\text{CMDNAME}\};$   
 $\backslash\text{CMDNAMECls}[\text{sub}][\text{sub}][\text{ext1}]\{\text{arg}\}[\text{ext2}] = \mathcal{C}\mathcal{M}\mathcal{D}\mathcal{N}\mathcal{A}\mathcal{M}\mathcal{E}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$



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

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

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

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

\mthsig, to do!
 • \mthsig{Name}[sub][sup][Ext] = $\mathcal{ame}_{sub}^{sup}Ext$
 • \mthargsig{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\mathcal{ame}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
 • \mthargsig*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\mathcal{ame}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
 • \mthparsig{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\mathcal{ame}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
 • \mthparsig*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\mathcal{ame}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$
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
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
625 \seqoflatlet{Sig}{mthsig}\seqofgrklow{Sig}{mthsig}

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

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

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

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

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

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

\mthstr, to do!
 • \mthstr{Name}[sub][sup][Ext] = $\mathcal{N}ame_{sub}^{sup}Ext$
 • \mthargstr{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\mathcal{N}ame_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
 • \mthargstr*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\mathcal{N}ame_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
 • \mthparstr{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\mathcal{N}ame_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
 • \mthparstr*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\mathcal{N}ame_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
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] = $cmd\mathcal{N}ame_{sub}^{sub}ext$
 • \cmdmthstr{cmdName}[NewName];
 \cmdNameStr[sub][sub][ext] = $\mathcal{N}ew\mathcal{N}ame_{sub}^{sub}ext$
639 \newcommandx{\cmdmthstr}[2][2=]
640 {\usrmth{#1}{Str}{str}[#2]}

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

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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]{Arg^{Ex^{Ex}}}[Ext2] = NamesupExt1(ArgExEx)Ext2
 • \mthargset*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupExt1(ArgExEx)Ext2
 • \mthparset{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupExt1[ParExEx]Ext2
 • \mthparset*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupExt1[ParExEx]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}

\arel, 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, $\Gamma, \Delta, E, E, Z, H, \Theta, \Theta, I, K, K, A, M, N, \Xi, O, \Pi, \Pi, P, P, \Sigma, \Sigma, T, \Upsilon, \Phi, \Phi, X, \Psi, \Omega$
670 \seqoflet{Rel}{mthrel}

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

```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```
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,  $\Gamma, \Delta, E, Z, H, \Theta, \varnothing, I, K, \Lambda, M, N, \Xi, O, \Pi, \text{II}, P, \Sigma, \varSigma, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$

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

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

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

```

 • \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(ArgExExt2)Ext2
 • \mthargsym*{Name}[sub][sup][Ext1]{ArgEx{Ex}}[Ext2] = NamesupsubExt1(ArgExExt2)Ext2
 • \mthparsym{Name}[sub][sup][Ext1]{ParEx{Ex}}[Ext2] = NamesupsubExt1[ParExExt2]Ext2
 • \mthparsym*{Name}[sub][sup][Ext1]{ParEx{Ex}}[Ext2] = NamesupsubExt1[ParExExt2]Ext2
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, ϑ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
Α, Β, Γ, Δ, Ε, Ζ, Η, Θ, Θ, Ι, Κ, Κ, Λ, Μ, Ν, Ξ, Ο, Π, Π, Ρ, Ρ, Σ, Σ, Τ, Τ, Φ, Φ, Χ, 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!

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

```
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, $\Gamma, \Delta, E, Z, H, \Theta, \varnothing, I, K, \Lambda, M, N, \Xi, O, \Pi, \textit{II}, P, \Sigma, \varSigma, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$
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!

```

- `\cmdmthparsnt{cmdName};`  
`\cmdNameSnt[sub][sub][ext1]{par}[ext2] = cmdNamesubext1[par]ext2`
- `\cmdmthparsnt{cmdName}[NewName];`  
`\cmdNameSnt[sub][sub][ext1]{par}[ext2] = NewNamesubext1[par]ext2`

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

`\cmdmthoparsnt` ... to do!

- `\cmdmthoparsnt{cmdName};`  
`\cmdNameSnt[sub][sub][par] = cmdNamesubsub[par]`
- `\cmdmthoparsnt{cmdName}[NewName];`  
`\cmdNameSnt[sub][sub][par] = NewNamesubsub[par]`

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

`\mthfrm`, ... to do!

- `\mthfrm{Name}[sub][sup][Ext] = NamesupsubExt`
- `\mthargfrm{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupsubExt1(ArgExEx)Ext2`
- `\mthargfrm*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = NamesupsubExt1(ArgExEx)Ext2`
- `\mthparfrm{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupsubExt1[ParExEx]Ext2`
- `\mthparfrm*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = NamesupsubExt1[ParExEx]Ext2`

762 `%% Style for Formulae`  
763 `\cmdmthall{frm}\newcommand{\mthstyfrm}{\mathit}`

`\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*  
*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*

764 `\seqoflet{Frm}{mthfrm}`

`\cmdmthfrm` ... to do!

- `\cmdmthfrm{cmdName};`  
`\cmdNameFrm[sub][sub][ext] = cmdNamesubsubext`
- `\cmdmthfrm{cmdName}[NewName];`  
`\cmdNameFrm[sub][sub][ext] = NewNamesubsubext`

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

`\cmdmthargfrm` ... to do!

- `\cmdmthargfrm{cmdName};`  
`\cmdNameFrm[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2`
- `\cmdmthargfrm{cmdName}[NewName];`  
`\cmdNameFrm[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2`

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

`\cmdmthoargfrm` ... to do!

- `\cmdmthoargfrm{cmdName};`  
`\cmdNameFrm[sub][sub][arg] = cmdNamesubsub(arg)`
- `\cmdmthoargfrm{cmdName}[NewName];`  
`\cmdNameFrm[sub][sub][arg] = NewNamesubsub(arg)`

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

`\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] = cmdNamesubext1[par]ext2
 • \cmdmthparmat{cmdName}[NewName];
 \cmdNameMat[sub][sub][ext1]{par}[ext2] = NewNamesubext1[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(ArgExEx)Ext2
 • \mthargvec*{Name}[sub][sup][Ext1]{ArgEx{Ex}}}[Ext2] = NamesubsupExt1(ArgExEx)Ext2
 • \mthparvec{Name}[sub][sup][Ext1]{ParEx{Ex}}}[Ext2] = NamesubsupExt1[ParExEx]Ext2
 • \mthparvec*{Name}[sub][sup][Ext1]{ParEx{Ex}}}[Ext2] = NamesubsupExt1[ParExEx]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] = $\text{cmdName}_{sub}^{sub}ext1[par]ext2$
 • \cmdmthparvec{cmdName}[NewName];
 \cmdNameVec[sub][sub][ext1]{par}[ext2] = $\text{NewName}_{sub}^{sub}ext1[par]ext2$
798 \newcommandx{\cmdmthparvec}[2][2=]
799 {\usrmth{#1}{Vec}{parvec}{#2}}

\cmdmthoparvec ... to do!
 • \cmdmthoparvec{cmdName};
 \cmdNameVec[sub][sub][par] = $\text{cmdName}_{sub}^{sub}[par]$
 • \cmdmthoparvec{cmdName}[NewName];
 \cmdNameVec[sub][sub][par] = $\text{NewName}_{sub}^{sub}[par]$
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 {\mthlbop{\stackrel{\text{\textup{def}}}{=}}{=}}%
876 {\mthlbop{\triangleq}}}
877 \DeclareRobustCommand{\seteq}
878 {\@ifstar{\mthlbop{\Coloneqq}}{\mthlbop{\coloneqq}}}
879 %%*****

\limp,
880 \DeclareRobustCommand{\limp}
881 {\mthlbop{\rightarrow}}

\lcoimp,
882 \DeclareRobustCommand{\lcoimp}
883 {\mthlbop{\Leftrightarrow}}
884 %%*****

\implies,
885 \DeclareRobustCommand{\implies}
886 {\mthlrel{\rightarrow}}
887 \DeclareRobustCommand{\notimplies}
888 {\mthlrel{\not\rightarrow}}

\implied,
889 \DeclareRobustCommand{\implied}
890 {\mthlrel{\Leftarrow}}
891 \DeclareRobustCommand{\notimplied}
892 {\mthlrel{\not\Leftarrow}}

\coimplies,
893 \DeclareRobustCommand{\coimplies}
894 {\mthlrel{\Leftrightarrow}}
895 \DeclareRobustCommand{\notcoimplies}
896 {\mthlrel{\not\Leftarrow}}
897 %%*****

\cmodels,
898 \DeclareRobustCommand{\cmodels}
899 {\mthlrel{\models}}
900 \DeclareRobustCommand{\notcmodels}
901 {\mthlrel{\not\models}}

```

```

\cequiv,
902 \DeclareRobustCommand{\cequiv}
903 {\mthlrel{\equiv}}
904 \DeclareRobustCommand{\notcequiv}
905 {\mthlrel{\not\equiv}}

906 %%*****%

\denot ...
907 \DeclareRobustCommand{\denot}
908 {\@ifstar{\@sdenot}{\@denot}}
909 \DeclareRobustCommand{\denot}[1]
910 {\mth{\argmid{\left\llbracket}{\#1}{\right\rrbracket}}}
911 \DeclareRobustCommand{\sdenot}[1]
912 {\mth*{\argmid{\llbracket}{\#1}{\rrbracket}}}

913 %%*****%

\dual, \adj,
914 \DeclareRobustCommand{\dual}[1]
915 {\mth{\overline{\#1}}}
916 \DeclareRobustCommand{\adj}[1]
917 {\mth{\mathring{\#1}}}
918 \DeclareRobustCommand{\der}[1]
919 {\mth{\widehat{\#1}}}
920 \DeclareRobustCommand{\trn}[1]
921 {\mth{\widetilde{\#1}}}

\vec ...
922 \DeclareRobustCommand{\vec}
923 {\@ifstar{\@svec}{\@vec}}
924 \DeclareRobustCommand{\@vec}[1]
925 {\mth{\mathaccent"017E{\#1}}}
926 \DeclareRobustCommand{\svec}[1]
927 {\mth{\overline{\#1}}}

928 %%*****%

\enumeration,
929 \varcmd{enumeration}{\mth*}{\{,\}{}}
930 \varcmd{enumerationx}{\mth*}{\{;\}{}}

\sequence,
931 \DeclareRobustCommand{\sequence}
932 {\@ifstar{\@ssequence}{\@sequence}}
933 \varcmd{@sequence}{\mth}{\left[\,]{,\}{\right]}}
934 \varcmd{@ssequence}{\mth*}{[\,]{,\}[]}}
935 \DeclareRobustCommand{\sequence1}
936 {\@ifstar{\@ssequence1}{\@sequence1}}
937 \varcmd{@sequence1}{\mth}{\left[\,]{,\}{\right.}}
938 \varcmd{@ssequence1}{\mth*}{[\,]{,\}[]}}
939 \DeclareRobustCommand{\sequencer}
940 {\@ifstar{\@ssequencer}{\@sequencer}}
941 \varcmd{@sequencer}{\mth}{\left.}{,\}{\right]}}
942 \varcmd{@ssequencer}{\mth*}{\{,\}[]}}
943 \DeclareRobustCommand{\sequencex}
944 {\@ifstar{\@ssequencex}{\@sequencex}}
945 \varcmd{@sequencex}{\mth}{\left[\,]{;\}{\right]}}
946 \varcmd{@ssequencex}{\mth*}{[\,]{;\}[]}}
947 \DeclareRobustCommand{\sequencex1}
948 {\@ifstar{\@ssequencex1}{\@sequencex1}}
949 \varcmd{@sequencex1}{\mth}{\left[\,]{;\}{\right.}}
950 \varcmd{@ssequencex1}{\mth*}{[\,]{;\}[]}}

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951 \DeclareRobustCommand{\sequencexr}
952 {\@ifstar{\@ssequencexr}{\@sequencexr}}
953 \varcmd{\sequencexr}{\mth}{\left.}{;}{\right]}{}
954 \varcmd{\ssequencexr}{\mth*}{}{}{}{}{}{}

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

979 %** Sets *****%

\set,
980 \DeclareRobustCommand{\set}
981 {\@ifstar{\@sset{\vert}}{\@set{\vert}}}
982 \DeclareRobustCommand{\setx}
983 {\@ifstar{\@sset{:}}{\@set{.!\:}}}
984 \DeclareRobustCommand{\@set}[3]
985 {\mth{\argmid{\left\lbrace}{\argsep{#2}{\,\middle#1\,}{#3}}{\right\rbrace}}}
986 \DeclareRobustCommand{\@sset}[3]
987 {\mth*{\argmid{\lbrace}{\argsep{#2}{\,\,#1\,}{#3}}{\rbrace}}}
988 \DeclareRobustCommand{\setl}
989 {\@ifstar{\@ssetl{\vert}}{\@setl{\vert}}}
990 \DeclareRobustCommand{\setlx}
991 {\@ifstar{\@ssetl{:}}{\@setl{.!\!\:}}}
992 \DeclareRobustCommand{\@setl}[2]
993 {\mth{\argmid{\left\lbrace}{#2}{\,\right#1\!}}}
994 \DeclareRobustCommand{\@ssetl}[2]
995 {\mth*{\argmid{\lbrace}{#2}{\,\,#1\!}}}
996 \DeclareRobustCommand{\setr}
997 {\@ifstar{\@ssetr}{\@setr}}
998 \DeclareRobustCommand{\setrx}
999 {\@ifstar{\@ssetr}{\@setr}}
1000 \DeclareRobustCommand{\@setr}[1]
1001 {\mth{\argmid{\left.}{#1}{\right\rbrace}}}
1002 \DeclareRobustCommand{\@ssetr}[1]
1003 {\mth*{\argmid}{#1}{\rbrace}}

\card ...
1004 \DeclareRobustCommand{\card}
1005 {\@ifstar{\@scard}{\@card}}
1006 \DeclareRobustCommand{\@card}[1]
1007 {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}

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1008 \DeclareRobustCommand{\@scard}[1]
1009 {\mth*\argmid{\lvert}{#1}{\rvert}}}

\pow ...
1010 \DeclareRobustCommand{\pow}[1]
1011 {\mth{2^{\defval{#1}{\cdot}}}}

1012 %** Relations *****%%

\emptyrel ...
1013 \DeclareRobustCommand{\emptyrel}
1014 {\mth{\varnothing}}

1015 %*****%%

\dom, \cod,
1016 \usrmth{\dom}{\}{argfun}
1017 \usrmth{\cod}{\}{argfun}
1018 \usrmth{\rng}{\}{argfun}
1019 \usrmth{\img}{\}{argfun}

1020 %*****%%

\prj ...
1021 \DeclareRobustCommand{\prj}
1022 {\mthlbop{\downarrow}}

\rst ...
1023 \DeclareRobustCommand{\rst}
1024 {\mthlbop{\upharpoonright}}

\cmp ...
1025 \DeclareRobustCommand{\cmp}
1026 {\mthlbop{\circ}}

1027 %** Functions *****%%

\emptyfun ...
1028 \DeclareRobustCommand{\emptyfun}
1029 {\mth{\varnothing}}

1030 %*****%%

\pto, \pmapsto ...
1031 \DeclareMathOperator{\pto}
1032 {\ensuremath{\rightharpoonup}}
1033 \DeclareMathOperator{\pmapsto}
1034 {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize\llcorner}}}%
1035 \kern-1.5ex\rightharpoonup}}

1036 %*****%%

\fix, \ifp,
1037 \usrmth{\fix}{\}{fun}
1038 \usrmth{\ifp}{\}{fun}
1039 \usrmth{\lfp}{\}{fun}
1040 \usrmth{\gfp}{\}{fun}

1041 %*****%%

\Aomega, \AOmega ...
1042 \usrmth{Aomega}{\}{argset}[\omega]
1043 \usrmth{AOmega}{\}{argset}[\Omega]

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\Atheta, \ATheta ...
1044 \usrmth{Atheta}{\argset}[\theta]
1045 \usrmth{ATheta}{\argset}[\Theta]

\Aomicron,
1046 \usrmth{Aomicron}{\argset}[\omicron]
1047 \usrmth{A0micron}{\argset}[\Omicron]

1048 %%** Numbers *****%%

\SetB ...
1049 \DeclareRobustCommand{\SetB}
1050 {\mthset[mathbb]{B}}

\SetF ...
1051 \DeclareRobustCommand{\SetF}
1052 {\mthset[mathbb]{F}}

\SetN,
1053 \DeclareRobustCommand{\SetN}
1054 {\mthset[mathbb]{N}}
1055 \DeclareRobustCommand{\SetNI}[1] []
1056 {\SetN[\infty #1]}

\SetZ,
1057 \DeclareRobustCommand{\SetZ}
1058 {\mthset[mathbb]{Z}}
1059 \DeclareRobustCommand{\SetZI}[1] []
1060 {\SetZ[\pm\infty #1]}
1061 \DeclareRobustCommand{\SetZPI}[1] []
1062 {\SetZ[+\infty #1]}
1063 \DeclareRobustCommand{\SetZNI}[1] []
1064 {\SetZ[-\infty #1]}

\SetQ,
1065 \DeclareRobustCommand{\SetQ}
1066 {\mthset[mathbb]{Q}}
1067 \DeclareRobustCommand{\SetQI}[1] []
1068 {\SetQ[\pm\infty #1]}
1069 \DeclareRobustCommand{\SetQPI}[1] []
1070 {\SetQ[+\infty #1]}
1071 \DeclareRobustCommand{\SetQNI}[1] []
1072 {\SetQ[-\infty #1]}

\SetR,
1073 \DeclareRobustCommand{\SetR}
1074 {\mthset[mathbb]{R}}
1075 \DeclareRobustCommand{\SetRI}[1] []
1076 {\SetR[\pm\infty #1]}
1077 \DeclareRobustCommand{\SetRPI}[1] []
1078 {\SetR[+\infty #1]}
1079 \DeclareRobustCommand{\SetRNI}[1] []
1080 {\SetR[-\infty #1]}

\SetC,
1081 \DeclareRobustCommand{\SetC}
1082 {\mthset[mathbb]{C}}
1083 \DeclareRobustCommand{\SetCI}[1] []
1084 {\SetC[\infty #1]}

1085 %*****%%

```

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\num,
1086 \DeclareRobustCommand{\num}[1]
1087 {\mth{[#1]}}
1088 \DeclareRobustCommand{\numcc}[2]
1089 {\mth{[\argsep{#1}{,}{#2}]}}
1090 \DeclareRobustCommand{\numco}[2]
1091 {\mth{[\argsep{#1}{,}{#2})}}
1092 \DeclareRobustCommand{\numoc}[2]
1093 {\mth{(\argsep{#1}{,}{#2})}}
1094 \DeclareRobustCommand{\numoo}[2]
1095 {\mth{(\argsep{#1}{,}{#2}))}}

1096 %%*****%

\abs, \norm ...
1097 \DeclareRobustCommand{\abs}
1098 {\@ifstar{\@sabs}{\@abs}}
1099 \DeclareRobustCommand{\@abs}[1]
1100 {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}
1101 \DeclareRobustCommand{\@sabs}[1]
1102 {\mth*{\argmid{\lvert}{#1}{\rvert}}}
1103 \DeclareRobustCommand{\norm}
1104 {\@ifstar{\@snorm}{\@norm}}
1105 \DeclareRobustCommand{\@norm}[1]
1106 {\mth{\argmid{\left\lVert}{#1}{\right\rVert}}}
1107 \DeclareRobustCommand{\@snorm}[1]
1108 {\mth*{\argmid{\lVert}{#1}{\rVert}}}

\floor, \ceil ...
1109 \DeclareRobustCommand{\floor}
1110 {\@ifstar{\@sfloor}{\@ffloor}}
1111 \DeclareRobustCommand{\@ffloor}[1]
1112 {\mth{\argmid{\left\lfloor}{#1}{\right\rfloor}}}
1113 \DeclareRobustCommand{\@sfloor}[1]
1114 {\mth*{\argmid{\lfloor}{#1}{\rfloor}}}
1115 \DeclareRobustCommand{\ceil}
1116 {\@ifstar{\@sceil}{\@ceiling}}
1117 \DeclareRobustCommand{\@ceiling}[1]
1118 {\mth{\argmid{\left\lceil}{#1}{\right\rceil}}}
1119 \DeclareRobustCommand{\@sceil}[1]
1120 {\mth*{\argmid{\lceil}{#1}{\rceil}}}

1121 %%*****%

\arg ...
1122 \usrmth{arg}{\fun}

\evn, \odd ...
1123 \usrmth{evn}{\fun}
1124 \usrmth{odd}{\fun}

\bst,
1125 \usrmth{bst}{\fun}
1126 \usrmth{argbst}{\fun}[arg\,bst]

\min, \max,
1127 \usrmth{min}{\fun}
1128 \usrmth{max}{\fun}
1129 \usrmth{argmin}{\fun}[arg\,min]
1130 \usrmth{argmax}{\fun}[arg\,max]

\inf, \sup ...
1131 \usrmth{inf}{\fun}
1132 \usrmth{sup}{\fun}

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1133 %** Sequences *****%
\emptyseq ...
1134 \DeclareRobustCommand{\emptyseq}
1135 {\mth{\varepsilon}}

\len ...
1136 \DeclareRobustCommand{\len}
1137 {\@ifstar{\@slen}{\@len}}
1138 \DeclareRobustCommandx{\@len}[3][1=, 2=]
1139 {\mth{\argmid{\#1\lvert}{\#3}{\#2\rvert}}}
1140 \DeclareRobustCommand{\@len}[1]
1141 {\mth{\argmid{\left\lvert}{\#1}{\right\rvert}}}
1142 \DeclareRobustCommand{\@slen}[1]
1143 {\mth*{\argmid{\lvert}{\#1}{\rvert}}}

\fst, \lst ...
1144 \usrmth{fst}{\}{argfun}
1145 \usrmth{lst}{\}{argfun}

1146 \fi
1147 %*****%
1148 %*****%
1149 %** Macros for Computational-Complexity Classes *****%
1150 %*****%
1151 \ifcom@

\defcomcls ... to do!
 • \defcomcls{CompClass};

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

 • \defcomcls{CompClass}[NewClass];

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

1152 \newcommandx{\defcomcls}[2][2=]
1153 {\csdef{\#1}{\txtoargcom{\defval{\#2}{\#1}}}}

\defcomclsgrp ... to do!
 • \defcomclsgrp{CompClass};

 \CompClass[sub][sup][arg] = $\text{COMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoCompClass[sub][sup][arg] = $\text{CoCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CompClassE[sub][sup][arg] = $\text{COMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoCompClassE[sub][sup][arg] = $\text{CoCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CompClassH[sub][sup][arg] = $\text{COMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoCompClassH[sub][sup][arg] = $\text{CoCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CompClassC[sub][sup][arg] = $\text{COMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoCompClassC[sub][sup][arg] = $\text{CoCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

 \DCompClass[sub][sup][arg] = $\text{DCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoDCompClass[sub][sup][arg] = $\text{CoDCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \DCompClassE[sub][sup][arg] = $\text{DCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoDCompClassE[sub][sup][arg] = $\text{CoDCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \DCompClassH[sub][sup][arg] = $\text{DCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoDCompClassH[sub][sup][arg] = $\text{CoDCOMPCLASS-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \DCompClassC[sub][sup][arg] = $\text{DCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoDCompClassC[sub][sup][arg] = $\text{CoDCOMPCLASS-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

 \NCompClass[sub][sup][arg] = $\text{NCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \CoNCompClass[sub][sup][arg] = $\text{CoNCOMPCLASS}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
 \NCompClassE[sub][sup][arg] = $\text{NCOMPCLASS-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

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

\UCompClass[sub][sup][arg] = UCompClassSUB(ARG)
\CoUCompClass[sub][sup][arg] = CoUCompClassSUB(ARG)
\UCompClassE[sub][sup][arg] = UCompClass-EASYSUB(ARG)
\CoUCompClassE[sub][sup][arg] = CoUCompClass-EASYSUB(ARG)
\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)

• \defcomclgrp{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)

```



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\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)
1154 \newcommandx{\defcomclsggrp}[2][2=]
1155 {\defcomclsgrpsem{#1}{\defval{#2}{#1}}}%
1156 \defcomclsgrpsem{#1}{\defval{#2}{#1}}[Co]}
1157 \newcommandx{\defcomclsgrpsem}[3][3=]
1158 {\defcomclsgrpred{#3#1}{#2}[#3]}%
1159 \defcomclsgrpred{#3D#1}{#2}[#3D]}%
1160 \defcomclsgrpred{#3N#1}{#2}[#3N]}%
1161 \defcomclsgrpred{#3U#1}{#2}[#3U]}%
1162 \defcomclsgrpred{#3A#1}{#2}[#3A]}%
1163 \newcommandx{\defcomclsgrpred}[3][3=]
1164 {\defcomclsgrpcmd{#1}{#2}[#3]}%
1165 \defcomclsgrpcmd{#1E}{#2}[#3][-easy]}%
1166 \defcomclsgrpcmd{#1H}{#2}[#3][-hard]}%
1167 \defcomclsgrpcmd{#1C}{#2}[#3][-complete]}%
1168 \newcommandx{\defcomclsgrpcmd}[4][3=, 4=]
1169 {\csdef{#1}{\txttoargcom{#3#2#4}}}%

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

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

 • \defcomhrc{CompHierarchy}[NewHierarchy];

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

1170 \newcommandx{\defcomhrc}[2][2=]
1171 {\csdef{#1}{\txttoparcom{\defval{#2}{#1}}}}

1172 %%*****%

\Easy, \Hard, ...

1173 \cmdtxtcom{Easy}
1174 \cmdtxtcom{Hard}
1175 \cmdtxtcom{Complete}

1176 %%*****%

\FPT • \FPT[sub][sup][arg] = FPTSUB(ARG)

1177 \defcomcls{FPT}

1178 %%*****%

\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)

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\QPTIME, ...

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

1185 \defcomclsgrp{QPTIME}

\QPSpace, ...

- \QPSpace[sub][sup][arg] = QPSpace<sup>SUB</sup><sub>SUB</sub>(ARG)
- \QPSpaceE[sub][sup][arg] = QPSpace-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \QPSpaceH[sub][sup][arg] = QPSpace-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \QPSpaceC[sub][sup][arg] = QPSpace-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DQPSpace[sub][sup][arg] = DQPSpace<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DQPSpaceE[sub][sup][arg] = DQPSpace-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DQPSpaceH[sub][sup][arg] = DQPSpace-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DQPSpaceC[sub][sup][arg] = DQPSpace-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NQPSpace[sub][sup][arg] = NQPSpace<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NQPSpaceE[sub][sup][arg] = NQPSpace-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NQPSpaceH[sub][sup][arg] = NQPSpace-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NQPSpaceC[sub][sup][arg] = NQPSpace-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UQPSpace[sub][sup][arg] = UQPSpace<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UQPSpaceE[sub][sup][arg] = UQPSpace-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UQPSpaceH[sub][sup][arg] = UQPSpace-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UQPSpaceC[sub][sup][arg] = UQPSpace-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \AQPSpace[sub][sup][arg] = AQPSpace<sup>SUB</sup><sub>SUB</sub>(ARG)
- \AQPSpaceE[sub][sup][arg] = AQPSpace-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \AQPSpaceH[sub][sup][arg] = AQPSpace-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \AQPSpaceC[sub][sup][arg] = AQPSpace-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)

1186 \defcomclsgrp{QPSpace}

\ExpTime, ...

- \ExpTime[sub][sup][arg] = EXPTime<sup>SUB</sup><sub>SUB</sub>(ARG)
- \ExpTimeE[sub][sup][arg] = EXPTime-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \ExpTimeH[sub][sup][arg] = EXPTime-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \ExpTimeC[sub][sup][arg] = EXPTime-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DExpTime[sub][sup][arg] = DEXPTime<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DExpTimeE[sub][sup][arg] = DEXPTime-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DExpTimeH[sub][sup][arg] = DEXPTime-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \DExpTimeC[sub][sup][arg] = DEXPTime-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NExpTime[sub][sup][arg] = NEXPTime<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NExpTimeE[sub][sup][arg] = NEXPTime-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NExpTimeH[sub][sup][arg] = NEXPTime-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \NExpTimeC[sub][sup][arg] = NEXPTime-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UExpTime[sub][sup][arg] = UEXPTime<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UExpTimeE[sub][sup][arg] = UEXPTime-EASY<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UExpTimeH[sub][sup][arg] = UEXPTime-HARD<sup>SUB</sup><sub>SUB</sub>(ARG)
- \UExpTimeC[sub][sup][arg] = UEXPTime-COMPLETE<sup>SUB</sup><sub>SUB</sub>(ARG)

- $\backslash\text{AExpTime}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpTime}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpTimeE}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpTime-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpTimeH}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpTime-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpTimeC}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpTime-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

1187  $\backslash\text{defcomclsggrp}\{\text{ExpTime}\}$

$\backslash\text{ExpSpace}, \dots$

- $\backslash\text{ExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{ExpSpace}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{ExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{ExpSpace-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{ExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{ExpSpace-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{ExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{ExpSpace-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{DExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{DExpSpace}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{DExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{DExpSpace-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{DExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{DExpSpace-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{DExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{DExpSpace-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{NExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{NExpSpace}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{NExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{NExpSpace-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{NExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{NExpSpace-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{NExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{NExpSpace-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{UExpSpace}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{UExpSpace-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{UExpSpace-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{UExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{UExpSpace-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpace}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpSpace}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpaceE}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpSpace-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpaceH}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpSpace-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- $\backslash\text{AExpSpaceC}[\text{sub}][\text{sup}][\text{arg}] = \text{AExpSpace-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

1188  $\backslash\text{defcomclsggrp}\{\text{ExpSpace}\}$

1189  $\%*****\%$

$\backslash\text{PH}$  •  $\backslash\text{PH}[\text{sub}][\text{sup}][\text{par}] = \text{PH}_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

1190  $\backslash\text{defcomhrc}\{\text{PH}\}$

$\backslash\text{WH}$  •  $\backslash\text{WH}[\text{sub}][\text{sup}][\text{par}] = \text{W}_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

1191  $\backslash\text{defcomhrc}\{\text{WH}\}[\text{W}]$

$\backslash\text{AH}$  •  $\backslash\text{AH}[\text{sub}][\text{sup}][\text{par}] = \text{A}_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

1192  $\backslash\text{defcomhrc}\{\text{AH}\}[\text{A}]$

$\backslash\text{DLH}, \backslash\text{DBH}$  •  $\backslash\text{DLH}[\text{sub}][\text{sup}][\text{par}] = \Delta_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

•  $\backslash\text{DBH}[\text{sub}][\text{sup}][\text{par}] = \Delta_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

1193  $\backslash\text{defcomhrc}\{\text{DLH}\}[\{\backslash\text{mth}\{\Delta\}\}]$

1194  $\backslash\text{defcomhrc}\{\text{DBH}\}[\{\backslash\text{mth}[\text{mathbf}\{\Delta\}]\}]$

$\backslash\text{ELH}, \backslash\text{EBH}$  •  $\backslash\text{ELH}[\text{sub}][\text{sup}][\text{par}] = \Sigma_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

•  $\backslash\text{EBH}[\text{sub}][\text{sup}][\text{par}] = \Sigma_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

1195  $\backslash\text{defcomhrc}\{\text{ELH}\}[\{\backslash\text{mth}\{\Sigma\}\}]$

1196  $\backslash\text{defcomhrc}\{\text{EBH}\}[\{\backslash\text{mth}[\text{mathbf}\{\Sigma\}]\}]$

$\backslash\text{ULH}, \backslash\text{UBH}$  •  $\backslash\text{ULH}[\text{sub}][\text{sup}][\text{par}] = \Pi_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

•  $\backslash\text{UBH}[\text{sub}][\text{sup}][\text{par}] = \Pi_{\text{SUB}}^{\text{SUP}}[\text{PAR}]$

1197  $\backslash\text{defcomhrc}\{\text{ULH}\}[\{\backslash\text{mth}\{\Pi\}\}]$

1198  $\backslash\text{defcomhrc}\{\text{UBH}\}[\{\backslash\text{mth}[\text{mathbf}\{\Pi\}]\}]$

1199  $\backslash\text{fi}$

1200  $\%*****\%$

1201  $\%*****\%$

1202  $\%** \text{Macros for Games} *****\%$

1203  $\%*****\%$

1204  $\backslash\text{ifgam@}$

```

1205 %** Logic Games *****%%
\SATG,
1206 %% Satisfiability Games
1207 \cmdtxtoparname{SATG}[Sat]
1208
1209 %% Validity Games
1210 \cmdtxtoparname{VALG}[Val]
1211
1212 %% Evaluation Games
1213 \cmdtxtoparname{EVLG}[Evl]
1214
1215 %% Synthesis Games
1216 \cmdtxtoparname{SYNG}[Syn]
1217
1218 %% Model-Checking Games
1219 \cmdtxtoparname{MCG}[MC]
1220
1221 %% Ehrenfeucht-Fraisse Games
1222 \cmdtxtoparname{EFG}[EF]

1223 %** Syntax *****%%

\PlrSym, \OppSym ...
1224 \newcommand{\plrsym}{E}
1225 \cmdmthsym{Plr}[\plrsym]
1226 \newcommand{\oppsym}{A}
1227 \cmdmthsym{Opp}[\oppsym]

\ArenaName,
1228 \newcommand{\arenaname}{A}
1229 \usrmthlatupp{Arena}{Name}{name}[\arenaname]

\PosSet,
1230 \newcommand{\possym}{v}
1231 \newcommand{\posset}{Ps}
1232 \cmdmthsetext{Pos}[\posset][\possym]
1233 \cmdmthsymelm{ipos}[\possym_{I}]
1234 \cmdmthsymelm{fpos}[\possym_{F}]
1235 \cmdmthset{PPos}[\posset_{\PlrSym}]
1236 \cmdmthsymelm{ppos}[\possym_{\PlrSym}]
1237 \cmdmthset{OPos}[\posset_{\OppSym}]
1238 \cmdmthsymelm{opos}[\possym_{\OppSym}]

\PlrFun ...
1239 \newcommand{\plrfun}{pl}
1240 \cmdmthfun{plr}[\plrfun]

\MovRel ...
1241 \newcommand{\movrel}{Mv}
1242 \cmdmthrel{Mov}[\movrel]

\GameName,
1243 \newcommand{\gamename}{\Game}
1244 \usrmthlatupp{Game}{Name}{name}[\gamename]

\WinSet ...
1245 \newcommand{\winset}{Wn}
1246 \cmdmthset{Win}[\winset]

\ObsSet, \obsFun ...
1247 \newcommand{\obsset}{Ob}
1248 \cmdmthset{Obs}[\obsset]
1249 \cmdmthfun{obs}

```

1250 %%\*\* Semantics \*\*\*\*\*%%

\PthSet, \pthFun ...

1251 \newcommand{\pthsym}{\pi}  
1252 \newcommand{\pthset}{Pth}  
1253 \cmdmthsettext{Pth}[\pthset][\pthsym]  
1254 \cmdmthfun{pth}

\HstSet, ...

1255 \newcommand{\hstsym}{\rho}  
1256 \newcommand{\hstset}{Hst}  
1257 \cmdmthsettext{Hst}[\hstset][\hstsym]  
1258 \cmdmthset{PHst}[\hstset\_{\PlrSym}]  
1259 \cmdmthsymelm{phst}[\hstsym\_{\PlrSym}]  
1260 \cmdmthset{OHst}[\hstset\_{\OppSym}]  
1261 \cmdmthsymelm{ohst}[\hstsym\_{\OppSym}]  
1262 \cmdmthfun{hst}

\PlaySet, \playFun ...

1263 \newcommand{\playsym}{\pi}  
1264 \newcommand{\playset}{Play}  
1265 \cmdmthsettext{Play}[\playset][\playsym]  
1266 \cmdmthfun{play}

\StrSet, ...

1267 \newcommand{\strsym}{\sigma}  
1268 \newcommand{\strset}{Str}  
1269 \cmdmthsettext{Str}[\strset][\strsym]  
1270 \cmdmthset{PStr}[\strset\_{\PlrSym}]  
1271 \cmdmthsymelm{pstr}[\strsym\_{\PlrSym}]  
1272 \cmdmthset{OStr}[\strset\_{\OppSym}]  
1273 \cmdmthsymelm{ostr}[\strsym\_{\OppSym}]

\PrfSet, \prfFun ...

1274 \newcommand{\prfsym}{\xi}  
1275 \newcommand{\prfset}{Prf}  
1276 \cmdmthsettext{Prf}[\prfset][\prfsym]

\preFun, \sucFun ...

1277 \newcommand{\prefun}{pre}  
1278 \cmdmthoargfun{pre}[\prefun]  
1279 \newcommand{\sucfun}{suc}  
1280 \cmdmthoargfun{suc}[\sucfun]

\entFun, \escFun ...

1281 \newcommand{\entfun}{ent}  
1282 \cmdmthoargfun{ent}[\entfun]  
1283 \newcommand{\escfun}{esc}  
1284 \cmdmthoargfun{esc}[\escfun]

\intFun, \outFun ...

1285 \newcommand{\intfun}{int}  
1286 \cmdmthoargfun{int}[\intfun]  
1287 \newcommand{\outfun}{out}  
1288 \cmdmthoargfun{out}[\outfun]

\atrFun, \rchFun ...

1289 \newcommand{\atrfun}{atr}  
1290 \cmdmthoargfun{atr}[\atrfun]  
1291 \newcommand{\rchfun}{rch}  
1292 \cmdmthoargfun{rch}[\rchfun]

```

\liftFun ...
1293 \newcommand{\liftfun}{\lift}
1294 \cmdmthoargfun{\lift}[\liftfun]

\solFun ...
1295 \newcommand{\solfun}{\sol}
1296 \cmdmthoargfun{\sol}[\solfun]

1297 %** Qualitative Games on Graph *****%

\BG,
1298 %% Buchi Games
1299 \cmdtxttoparname{BG}
1300
1301 %% Co-Buchi Games
1302 \cmdtxttoparname{CG}
1303
1304 %% Parity Games
1305 \cmdtxttoparname{PG}
1306
1307 %% Rabin Games
1308 \cmdtxttoparname{RG}
1309
1310 %% Streett Games
1311 \cmdtxttoparname{SG}
1312
1313 %% Muller Games
1314 \cmdtxttoparname{MG}

1315 %** Syntax *****%

\EvnSym, \OddSym ...
1316 \newcommand{\evnsym}{0}
1317 \cmdmthsym{Evnsym}[\evnsym]
1318 \newcommand{\oddsym}{1}
1319 \cmdmthsym{Oddsym}[\oddsym]

\PrtSet, \prtFun ...
1320 \newcommand{\prtsym}{p}
1321 \newcommand{\prtset}{Pr}
1322 \cmdmthsetext{Prt}[\prtset][\prtsym]
1323 \cmdmthfun{prt}[pr]

1324 %** Semantics *****%
...
1325 %** Quantitative Games on Graph *****%

\EG,
1326 %% Energy Games
1327 \cmdtxttoparname{EG}
1328
1329 %% Mean-Payoff Games
1330 \cmdtxttoparname{MPG}
1331
1332 %% Discounted-Payoff Games
1333 \cmdtxttoparname{DPG}

1334 %** Syntax *****%

\MaxSym, \MinSym ...
1335 \newcommand{\maxsym}{\oplus}
1336 \cmdmthsym{Max}[\maxsym]
1337 \newcommand{\minsym}{\boxminus}
1338 \cmdmthsym{Min}[\minsym]

```



```

\WghSet, \wghFun ...
1339 \newcommand{\wghsym}{w}
1340 \newcommand{\wghset}{Wg}
1341 \cmdmthsetext{Wgh}[\wghset][\wghsym]
1342 \cmdmthfun{wgh}[wg]

1343 %** Semantics *****%%
...
1344 \fi
1345 %*****%%
1346 %*****%%
1347 %** Macros for Logics *****%%
1348 %*****%%
1349 \iflog@
1350 %** Propositional Logics *****%%

\BF, \QBF,
1351 % Boolean Formulae
1352 \cmdtxttoparname{BF}
1353
1354 % Quantified Boolean Formulae
1355 \DeclareRobustCommand{\QBF}
1356 {\{\txtname{Q}\}\BF}
1357 \DeclareRobustCommand{\EBF}
1358 {\ensuremath{\exists}\BF}
1359 \DeclareRobustCommand{\UBF}
1360 {\ensuremath{\forall}\BF}

1361 %** Syntax *****%%

\LogSig,
1362 \newcommand{\logsig}{L}
1363 \usrmthlatupp{Log}{Sig}{sig}[\logsig]

\Tt, \Ff ...
1364 \newcommand{\ttsym}{\top}
1365 \usrmth{Tt}{\}{sym}[\ttsym]
1366 \newcommand{\ffsym}{\bot}
1367 \usrmth{Ff}{\}{sym}[\ffsym]

\LNeg, \LNot ...
1368 \newcommand{\lnegsym}{\neg}
1369 \usrmth{LNeg}{\}{luop}[\lnegsym]
1370 \newcommand{\lnotsym}{\sim}
1371 \usrmth{LNot}{\}{luop}[\lnotsym]

\LCon, \LDis ...
1372 \newcommand{\lconsym}{\land}
1373 \usrmth{LCon}{\}{lbop}[\lconsym]
1374 \newcommand{\ldissym}{\lor}
1375 \usrmth{LDis}{\}{lbop}[\ldissym]

\LImp, \LCoi ...
1376 \newcommand{\limpsym}{\rightarrow}
1377 \usrmth{LImp}{\}{lbop}[\limpsym]
1378 \newcommand{\lcoisym}{\leftrightarrow}
1379 \usrmth{LCoi}{\}{lbop}[\lcoisym]

\LExs, \LAll ...
1380 \newcommand{\lexssym}{\exists}
1381 \usrmth{LExs}{\}{luop}[\lexssym]
1382 \newcommand{\lallsym}{\forall}
1383 \usrmth{LAll}{\}{luop}[\lallsym]

```

```

\APSet,
1384 \newcommand{\apsym}{p}
1385 \newcommand{\apset}{AP}
1386 \cmdmthsetext{AP}[\apset][\apsym]
1387 \cmdmthfun{ap}\usrmth{ap}{-}{argfun}

\sub ...
1388 \usrmth{sub}{-}{argfun}

\Cnt, \Qnt, \Sym ...
1389 \usrmth{Cnt}{-}{sym}[C]
1390 \usrmth{Qnt}{-}{sym}[Q]
1391 \usrmth{Sym}{-}{sym}[\odot]

\QAE, \QEA ...
1392 \usrmth{QAE}{-}{sym}[\forall\exists]
1393 \usrmth{QEA}{-}{sym}[\exists\forall]

\QntSet,
1394 \newcommand{\qntsym}{\wp}
1395 \newcommand{\qntset}{Qn}
1396 \cmdmthsetext{Qnt}[\qntset][\qntsym]

\free, \bound ...
1397 \usrmth{free}{-}{argfun}
1398 \usrmth{bound}{-}{argfun}

\dep, \alt ...
1399 \usrmth{dep}{-}{argfun}
1400 \usrmth{alt}{-}{argfun}

\cnf, \dnf,
1401 \cmdtxtabr{cnf}
1402 \cmdtxtabr{dnf}
1403 \cmdtxtabr{pnf}
1404 \cmdtxtabr{nnf}

1405 %** Semantics *****%%

\LogStr,
1406 \newcommand{\logstr}{L}
1407 \usrmthlatupp{Log}{Str}{str}[\logstr]

\ValSet,
1408 \newcommand{\valsym}{\xi}
1409 \newcommand{\valset}{Val}
1410 \cmdmthsetext{Val}[\valset][\valsym]

\AsgSet,
1411 \newcommand{\asgsym}{\chi}
1412 \newcommand{\asgset}{Asg}
1413 \cmdmthsetext{Asg}[\asgset][\asgsym]

1414 %** First-Order Logics I *****%%

\FOL,
1415 % First-Order Logic
1416 \cmdtxtoparname{FOL}[Fol]
1417 \cmdtxtoparname{FO}[FO]
1418
1419 % Monadic First-Order Logic
1420 \DeclareRobustCommand{\MFOL}
1421 {\{\txtname{M}\}\FOL}
1422 \DeclareRobustCommand{\MFO}
1423 {\{\txtname{M}\}\FO}

```

```

1424 %** Syntax ****
\VarSig,
1425 \newcommand{\varsig}{V}
1426 \usrmthlatupp{Var}{Sig}{sig}[\varsig]
1427 \newcommand{\varsym}{x}
1428 \newcommand{\varset}{Vr}
1429 \cmdmthsetext{Var}[\varset][\varsym]
1430 \usrmth{var}{-}{argfun}[vr]
1431 \cmdmthfun{dim}[dm]\usrmth{dim}{-}{argfun}[dm]

\ConSig,
1432 \newcommand{\consig}{C}
1433 \usrmthlatupp{Con}{Sig}{sig}[\consig]
1434 \newcommand{\consym}{c}
1435 \newcommand{\conset}{Cn}
1436 \cmdmthsetext{Con}[\conset][\consym]
1437 \usrmth{con}{-}{argfun}[cn]

\FunSig,
1438 \newcommand{\funsig}{F}
1439 \usrmthlatupp{Fun}{Sig}{sig}[\funsig]
1440 \newcommand{\funsym}{f}
1441 \newcommand{\funset}{Fn}
1442 \cmdmthsetext{Fun}[\funset][\funsym]
1443 \usrmth{fun}{-}{argfun}[fn]
1444 \cmdmthfun{art}[ar]\usrmth{art}{-}{argfun}[ar]

\TerSig,
1445 \newcommand{\tersig}{T}
1446 \usrmthlatupp{Ter}{Sig}{sig}[\tersig]
1447 \newcommand{\tersym}{t}
1448 \newcommand{\terset}{Tr}
1449 \cmdmthsetext{Ter}[\terset][\tersym]
1450 \usrmth{ter}{-}{argfun}

\RelSig,
1451 \newcommand{\relsig}{R}
1452 \usrmthlatupp{Rel}{Sig}{sig}[\relsig]
1453 \newcommand{\relsym}{r}
1454 \newcommand{\relset}{Rl}
1455 \cmdmthsetext{Rel}[\relset][\relsym]
1456 \usrmth{rel}{-}{argfun}[rl]

\skm ...
1457 \usrmth{skm}{-}{argfun}

1458 %** Semantics ****

\ConStr,
1459 \newcommand{\constr}{C}
1460 \usrmthlatupp{Con}{Str}{str}[\constr]

\FunStr,
1461 \newcommand{\funstr}{F}
1462 \usrmthlatupp{Fun}{Str}{str}[\funstr]

\TerStr,
1463 \newcommand{\terstr}{T}
1464 \usrmthlatupp{Ter}{Str}{str}[\terstr]

\RelStr,
1465 \newcommand{\relstr}{R}
1466 \usrmthlatupp{Rel}{Str}{str}[\relstr]

```

```

1467 %** First-Order Logics II *****%%
\DF, \IF,
1468 % Dependence-Friendly Logic
1469 \cmdtxttoparname{DF}
1470
1471 % Independence-Friendly Logic
1472 \cmdtxttoparname{IF}
1473
1474 % Dependence/Independence-Friendly Logic
1475 \cmdtxttoparname{DIF}
1476
1477 % Dependence Logic
1478 \cmdtxttoparname{DL}
1479
1480 % Team Logic
1481 \cmdtxttoparname{TL}
1482
1483 % Alternating Dependence-Friendly Logic
1484 \cmdtxttoparname{ADF}
1485
1486 % Alternating Independence-Friendly Logic
1487 \cmdtxttoparname{AIF}
1488
1489 % Alternating Dependence/Independence-Friendly Logic
1490 \cmdtxttoparname{ADIF}
...
1491 %** Syntax *****%%

\LEExs, \LAA11 ...
1492 \newcommand{\leexssym}{\Sigma}
1493 \usrmth{LEExs}{\luop}{\leexssym}
1494 \newcommand{\laallsym}{\Pi}
1495 \usrmth{LAA11}{\luop}{\laallsym}

1496 %** Semantics *****%%
...
1497 %** Second-Order Logics I *****%%

\SOL,
1498 % Second-Order Logic
1499 \cmdtxttoparname{SOL}[Sol]
1500 \cmdtxttoparname{SO}
1501
1502 % Weak Second-Order Logic
1503 \DeclareRobustCommand{\WSOL}
1504 {\{\txtname{W}\}\SOL}
1505 \DeclareRobustCommand{\WSO}
1506 {\{\txtname{W}\}\SO}
1507
1508 % coWeak Second-Order Logic
1509 \DeclareRobustCommand{\coWSOL}
1510 {\{\txtname{coW}\}\SOL}
1511 \DeclareRobustCommand{\coWSO}
1512 {\{\txtname{coW}\}\SO}
1513
1514 % Monadic Second-Order Logic
1515 \DeclareRobustCommand{\MSOL}
1516 {\{\txtname{M}\}\SOL}
1517 \DeclareRobustCommand{\MSO}
1518 {\{\txtname{M}\}\SO}

```

```

1519
1520 % Weak Monadic Second-Order Logic
1521 \DeclareRobustCommand{\WMSOL}
1522 {\txtname{W}}\MSOL}
1523 \DeclareRobustCommand{\WMSO}
1524 {\txtname{W}}\MSO}
1525
1526 % coWeak Monadic Second-Order Logic
1527 \DeclareRobustCommand{\coWMSOL}
1528 {\txtname{coW}}\MSOL}
1529 \DeclareRobustCommand{\coWMSO}
1530 {\txtname{coW}}\MSO}

1531 %** Syntax *****%

\FVarSet,
1532 \newcommand{\fvarysym}{x}
1533 \newcommand{\fvarset}{FVr}
1534 \cmdmthsettext{FVar}[\fvarset][\fvarysym]

\SVarSet,
1535 \newcommand{\svarysym}{X}
1536 \newcommand{\svarset}{SVr}
1537 \cmdmthsettext{SVar}[\svarset][\svarysym]

1538 %** Semantics *****%
...
1539 %** Second-Order Logics II *****%

\TL, \PL,
1540 % Tree Logic
1541 \cmdtxttoparname{TL}
1542
1543 % Weak Tree Logic
1544 \DeclareRobustCommand{\WTL}
1545 {\txtname{W}}\TL}
1546
1547 % coWeak Tree Logic
1548 \DeclareRobustCommand{\coWTL}
1549 {\txtname{coW}}\TL}
1550
1551 % Monadic Tree Logic
1552 \DeclareRobustCommand{\MTL}
1553 {\txtname{M}}\TL}
1554
1555 % Weak Monadic Tree Logic
1556 \DeclareRobustCommand{\WMTL}
1557 {\txtname{W}}\MTL}
1558
1559 % coWeak Monadic Tree Logic
1560 \DeclareRobustCommand{\coWMTL}
1561 {\txtname{coW}}\MTL}
1562
1563 % Path Logic
1564 \cmdtxttoparname{PL}
1565
1566 % Weak Path Logic
1567 \DeclareRobustCommand{\WPL}
1568 {\txtname{W}}\PL}
1569
1570 % coWeak Path Logic
1571 \DeclareRobustCommand{\coWPL}
1572 {\txtname{coW}}\PL}

```

```

1573
1574 % Monadic Path Logic
1575 \DeclareRobustCommand{\MPL}
1576 {\txtname{M}}\PL}
1577
1578 % Weak Monadic Path Logic
1579 \DeclareRobustCommand{\WMPL}
1580 {\txtname{W}}\MPL}
1581
1582 % coWeak Monadic Path Logic
1583 \DeclareRobustCommand{\coWMPL}
1584 {\txtname{coW}}\MPL}
1585 %** Syntax *****%
...
1586 %** Semantics *****%
...
1587 %** Modal Logics I *****%

```

\ML, \GML, ...

```

1588 % Modal Logic
1589 \cmdtxttoparname{ML}
1590
1591 % Graded Modal Logic
1592 \DeclareRobustCommand{\GML}
1593 {\txtname{G}}\ML}
1594
1595 % Quantified Modal Logic
1596 \DeclareRobustCommand{\QML}
1597 {\txtname{Q}}\ML}
1598 \DeclareRobustCommand{\EML}
1599 {\ensuremath{\exists}\ML}
1600 \DeclareRobustCommand{\UML}
1601 {\ensuremath{\forall}\ML}
1602 %** Syntax *****%

```

\Opr ...

```

1603 \usrmth{Opr}{\sym}[Op]

```

\DMod, \BMod ...

```

1604 \usrmth{DMod}{\sym}[\Diamond]
1605 \usrmth{BMod}{\sym}[\Box]

```

\Exs, \All ...

```

1606 \DeclareRobustCommand{\Exs}
1607 {\@ifstar{\@sexs}{\@exs}}
1608 \DeclareRobustCommand{\@sexs}[1]
1609 {\mth{DMod}[#1]}
1610 \DeclareRobustCommand{\@exs}[1]
1611 {\mth{defval{\argmid{\langle}{#1}{\rangle}}{\DMod}}}
1612 \DeclareRobustCommand{\All}
1613 {\@ifstar{\@sall}{\@all}}
1614 \DeclareRobustCommand{\@sall}[1]
1615 {\mth{BMod}[#1]}
1616 \DeclareRobustCommand{\@all}[1]
1617 {\mth{defval{\argmid{\left}[#1]{\right}}{\BMod}}}
1618 %** Semantics *****%

```

\KrpStr, ...

```

1619 \newcommand{\krpstr}{K}
1620 \usrmthlatupp{Krp}{Str}{str}[\krpstr]

```

```

\WrlSet,
1621 \newcommand{\wrlsym}{w}
1622 \newcommand{\wrlset}{W}
1623 \cmdmthsetext{Wrl}[\wrlset][\wrlsym]
1624 \cmdmthsymelm{iwrl}[\wrlsym_{I}]

\AccRel, \TrnRel ...
1625 \newcommand{\accsym}{R}
1626 \cmdmthrel{Acc}[\accsym]
1627 \cmdmthrel{Trn}[\accsym]

\labFun ...
1628 \newcommand{\labsym}{\lambda}
1629 \cmdmthfun{lab}[\labsym]

\PthSet, \pthFun ...
1630 \providecommand{\pthsym}{\pi}
1631 \providecommand{\pthset}{Pth}
1632 \cmdmthsetext{Pth}[\pthset][\pthsym]
1633 \cmdmthfun{pth}

1634 %** Modal Logics II *****%

\MC, \GMC,
1635 % Mu Calculus
1636 \cmdtxttoparname{MC}[\ensuremath{\mu}-Calculus]
1637
1638 % Graded Mu Calculus
1639 \DeclareRobustCommand{\GMC}
1640 {\{\txtname{G}\}\MC}
1641
1642 % Quantified Mu Calculus
1643 \DeclareRobustCommand{\QMC}
1644 {\{\txtname{Q}\}\MC}
1645 \DeclareRobustCommand{\EMC}
1646 {\ensuremath{\exists}\MC}
1647 \DeclareRobustCommand{\UMC}
1648 {\ensuremath{\forall}\MC}
1649
1650 % Alternation-Free Mu Calculus
1651 \DeclareRobustCommand{\AFMC}
1652 {\{\txtname{AF}\}\MC}
1653
1654 % Alternation-Free Graded Mu Calculus
1655 \DeclareRobustCommand{\AFGMC}
1656 {\{\txtname{AF}\}\GMC}
1657
1658 % Quantified Alternation-Free Mu Calculus
1659 \DeclareRobustCommand{\QAFMC}
1660 {\{\txtname{Q}\}\AFMC}
1661 \DeclareRobustCommand{\EAFMC}
1662 {\ensuremath{\exists}\AFMC}
1663 \DeclareRobustCommand{\UAFMC}
1664 {\ensuremath{\forall}\AFMC}
1665
1666 %** Syntax *****%
...
1667 %** Semantics *****%
...
1668 %** Temporal Logics I *****%

```

```

\PTL, \LTL,
1669 % Propositional Temporal Logic
1670 \cmdtxttoparname{PTL}
1671
1672 % Quantified Propositional Temporal Logic
1673 \DeclareRobustCommand{\QPTL}
1674 {\{\txtrname{Q}\}\PTL}
1675 \DeclareRobustCommand{\EPTL}
1676 {\ensuremath{\exists}\PTL}
1677 \DeclareRobustCommand{\UPTL}
1678 {\ensuremath{\forall}\PTL}
1679
1680 % Linear Temporal Logic
1681 \cmdtxttoparname{LTL}
1682
1683 % Quantified Linear Temporal Logic
1684 \DeclareRobustCommand{\QLTL}
1685 {\{\txtrname{Q}\}\LTL}
1686 \DeclareRobustCommand{\ELTL}
1687 {\ensuremath{\exists}\LTL}
1688 \DeclareRobustCommand{\ULTL}
1689 {\ensuremath{\forall}\LTL}

1690 %** Syntax *****%

\X,
1691 \usrmth{X}{-}{sym}[X\,]
1692 \usrmth{F}{-}{sym}[F\,]
1693 \usrmth{G}{-}{sym}[G\,]
1694 \usrmth{U}{-}{sym}[\,U\,]
1695 \usrmth{R}{-}{sym}[\,R\,]

\Y,
1696 \usrmth{Y}{-}{sym}[G\,]
1697 \usrmth{P}{-}{sym}[P\,]\let\SavePildcrow\P
1698 \usrmth{H}{-}{sym}[H\,]\let\SaveDoubleAcute\H
1699 \usrmth{S}{-}{sym}[\,S\,]\let\SaveSectionSymbol\S
1700 \usrmth{B}{-}{sym}[\,B\,]

1701 %** Semantics *****%

...

1702 %** Temporal Logics II *****%

\PDL, \CTL,
1703
1704 % Propositional Dynamic Logic
1705 \cmdtxttoparname{PDL}
1706
1707 % Computation Tree Logic
1708 \cmdtxttoparname{CTL}
1709
1710 % Weak Computation Tree Logic
1711 \DeclareRobustCommand{\WCTL}
1712 {\{\txtrname{W}\}\CTL}
1713
1714 % Quantified Computation Tree Logic
1715 \DeclareRobustCommand{\QCTL}
1716 {\{\txtrname{Q}\}\CTL}
1717 \DeclareRobustCommand{\ECTL}
1718 {\ensuremath{\exists}\CTL}
1719 \DeclareRobustCommand{\UCTL}
1720 {\ensuremath{\forall}\CTL}

```



```

1721
1722 % Improved Computation Tree Logic
1723 \cmdtxttoparname{CTLP}[CTL+{+}$]
1724
1725 % Weak Improved Computation Tree Logic
1726 \DeclareRobustCommand{\WCTLP}
1727 {\{\txtrname{W}\}\CTLP}
1728
1729 % Quantified Improved Computation Tree Logic
1730 \DeclareRobustCommand{\QCTLP}
1731 {\{\txtrname{Q}\}\CTLP}
1732 \DeclareRobustCommand{\ECTLP}
1733 {\ensuremath{\exists}\CTLP}
1734 \DeclareRobustCommand{\UCTLP}
1735 {\ensuremath{\forall}\CTLP}
1736
1737 % Full Computation Tree Logic
1738 \cmdtxttoparname{CTLS}[CTL*]
1739
1740 % Weak Full Computation Tree Logic
1741 \DeclareRobustCommand{\WCTLS}
1742 {\{\txtrname{W}\}\CTLS}
1743
1744 % Quantified Full Computation Tree Logic
1745 \DeclareRobustCommand{\QCTLS}
1746 {\{\txtrname{Q}\}\CTLS}
1747 \DeclareRobustCommand{\ECTLS}
1748 {\ensuremath{\exists}\CTLS}
1749 \DeclareRobustCommand{\UCTLS}
1750 {\ensuremath{\forall}\CTLS}
1751 %** Syntax *****%

\E, \A ...
1752 \usrmth{E}{-}{sym}
1753 \usrmth{A}{-}{sym}

1754 %** Semantics *****%
...
1755 %** Strategic Logics I *****%

\ATL,
1756 % Alternating Temporal Logic
1757 \cmdtxttoparname{ATL}
1758
1759 % Weak Alternating Tree Logic
1760 \DeclareRobustCommand{\WATL}
1761 {\{\txtrname{W}\}\ATL}
1762
1763 % Quantified Alternating Temporal Logic
1764 \DeclareRobustCommand{\QATL}
1765 {\{\txtrname{Q}\}\ATL}
1766 \DeclareRobustCommand{\EATL}
1767 {\ensuremath{\exists}\ATL}
1768 \DeclareRobustCommand{\UATL}
1769 {\ensuremath{\forall}\ATL}
1770
1771 % Improved Alternating Temporal Logic
1772 \cmdtxttoparname{ATLP}[ATL+{+}$]
1773
1774 % Weak Improved Alternating Tree Logic
1775 \DeclareRobustCommand{\WATLP}
1776 {\{\txtrname{W}\}\ATLP}

```

```

1777
1778 % Quantified Improved Alternating Temporal Logic
1779 \DeclareRobustCommand{\QATLP}
1780 {\textrname{Q}}\ATLP}
1781 \DeclareRobustCommand{\EATLP}
1782 {\ensuremath{\exists}\ATLP}
1783 \DeclareRobustCommand{\UATLP}
1784 {\ensuremath{\forall}\ATLP}
1785
1786 % Full Alternating Temporal Logic
1787 \cmdtxtopname{ATLS}[ATL*]
1788
1789 % Weak Full Alternating Tree Logic
1790 \DeclareRobustCommand{\WATLS}
1791 {\textrname{W}}\ATLS}
1792
1793 % Quantified Full Alternating Temporal Logic
1794 \DeclareRobustCommand{\QATLS}
1795 {\textrname{Q}}\ATLS}
1796 \DeclareRobustCommand{\EATLS}
1797 {\ensuremath{\exists}\ATLS}
1798 \DeclareRobustCommand{\UATLS}
1799 {\ensuremath{\forall}\ATLS}
1800 %** Syntax *****%

\EExs, \AA11 ...
1801 \DeclareRobustCommand{\EExs}[1]
1802 {\mth{\argmid{\langle!\rangle}{\defval{#1}{\emptyset}}{\rangle!\rangle}}
1803 \DeclareRobustCommand{\AA11}[1]
1804 {\mth{\argmid{\left[\left[{\defval{#1}{\emptyset}}{\right]\right]}}}

1805 %** Semantics *****%

\CGS ...
1806 \cmdtxtname{CGS}

\CGSStr,
1807 \newcommand{\cgsstr}{G}
1808 \usrmthlatupp{CGS}{Str}{str}[\cgsstr]

\AgnSet,
1809 \newcommand{\agnsym}{a}
1810 \newcommand{\agnset}{Ag}
1811 \cmdmthsetext{Agn}[\agnset][\agnsym]

\PosSet,
1812 \providecommand{\possym}{v}
1813 \providecommand{\posset}{Ps}
1814 \cmdmthsetext{Pos}[\posset][\possym]
1815 \cmdmthsymelm{ipos}[\possym_{I}]
1816 \cmdmthsymelm{fpos}[\possym_{F}]
1817 \cmdmthset{PPos}[\posset_{PlrSym}]
1818 \cmdmthsymelm{ppos}[\possym_{PlrSym}]
1819 \cmdmthset{OPos}[\posset_{OppSym}]
1820 \cmdmthsymelm{opos}[\possym_{OppSym}]

\SttSet,
1821 \newcommand{\sttsym}{s}
1822 \newcommand{\sttset}{St}
1823 \cmdmthsetext{Stt}[\sttset][\sttsym]
1824 \cmdmthset{IStt}[\sttset_{I}]
1825 \cmdmthsymelm{istt}[\sttsym_{I}]
1826 \cmdmthset{FStt}[\sttset_{F}]
1827 \cmdmthsymelm{fstt}[\sttsym_{F}]

```

```

\ActSet,
1828 \newcommand{\actsym}{c}
1829 \newcommand{\actset}{Ac}
1830 \cmdmthsettext{Act}[\actset][\actsym]

\DecSet,
1831 \newcommand{\decsym}{d}
1832 \newcommand{\decset}{Dc}
1833 \cmdmthsettext{Dec}[\decset][\decsym]

\movFun ...
1834 \newcommand{\movsym}{\tau}
1835 \cmdmthfun{mov}[\movsym]

\HstSet,
1836 \providecommand{\hstsym}{\rho}
1837 \providecommand{\hstset}{Hst}
1838 \cmdmthsettext{Hst}[\hstset][\hstsym]
1839 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1840 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1841 \cmdmthset{OHst}[\hstset_{\OppSym}]
1842 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1843 \cmdmthfun{hst}

\PlaySet, \playFun ...
1844 \providecommand{\playsym}{\pi}
1845 \providecommand{\playset}{Play}
1846 \cmdmthsettext{Play}[\playset][\playsym]
1847 \cmdmthfun{play}

\StrSet,
1848 \providecommand{\strsym}{\sigma}
1849 \providecommand{\strset}{Str}
1850 \cmdmthsettext{Str}[\strset][\strsym]
1851 \cmdmthset{PStr}[\strset_{\PlrSym}]
1852 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1853 \cmdmthset{OStr}[\strset_{\OppSym}]
1854 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

\PrfSet, \prfFun ...
1855 \providecommand{\prfsym}{\xi}
1856 \providecommand{\prfset}{Prf}
1857 \cmdmthsettext{Prf}[\prfset][\prfsym]

1858 %** Strategic Logics II *****%

\SL,
1859 % Strategy Logic
1860 \cmdtxttoparname{SL}
1861
1862 \DeclareRobustCommand{\ESL}
1863 {\ensuremath{\exists}\SL}
1864 \DeclareRobustCommand{\USL}
1865 {\ensuremath{\forall}\SL}
1866
1867 \DeclareRobustCommand{\FSL}
1868 {\{\textname{F}\}\SL}
1869
1870 \DeclareRobustCommand{\EFSL}
1871 {\ensuremath{\exists}\FSL}
1872 \DeclareRobustCommand{\UFSL}
1873 {\ensuremath{\forall}\FSL}
1874

```

```

1875 % One-Goal Strategy Logic
1876 \DeclareRobustCommandx{\OGSL}[3][1=, 2=, 3=]
1877 {\SL[#1][#2][1g\arglef{,}{#3}]}
1878
1879 \DeclareRobustCommand{\EOGSL}
1880 {\ensuremath{\exists}\OGSL}
1881 \DeclareRobustCommand{\UOGSL}
1882 {\ensuremath{\forall}\OGSL}
1883
1884 \DeclareRobustCommand{\FOGSL}
1885 {\{\textname{F}\}\OGSL}
1886
1887 \DeclareRobustCommand{\EFOGSL}
1888 {\ensuremath{\exists}\FOGSL}
1889 \DeclareRobustCommand{\UFOGSL}
1890 {\ensuremath{\forall}\FOGSL}
1891
1892 % Conjunctive-Goal Strategy Logic
1893 \DeclareRobustCommandx{\CGSL}[3][1=, 2=, 3=]
1894 {\SL[#1][#2][cg\arglef{,}{#3}]}
1895
1896 \DeclareRobustCommand{\ECGSL}
1897 {\ensuremath{\exists}\CGSL}
1898 \DeclareRobustCommand{\UCGSL}
1899 {\ensuremath{\forall}\CGSL}
1900
1901 \DeclareRobustCommand{\FCGSL}
1902 {\{\textname{F}\}\CGSL}
1903
1904 \DeclareRobustCommand{\EFCGSL}
1905 {\ensuremath{\exists}\FCGSL}
1906 \DeclareRobustCommand{\UFCGSL}
1907 {\ensuremath{\forall}\FCGSL}
1908
1909 % Disjunctive-Goal Strategy Logic
1910 \DeclareRobustCommandx{\DGS}[3][1=, 2=, 3=]
1911 {\SL[#1][#2][dg\arglef{,}{#3}]}
1912
1913 \DeclareRobustCommand{\EDGS}
1914 {\ensuremath{\exists}\DGS}
1915 \DeclareRobustCommand{\UDGS}
1916 {\ensuremath{\forall}\DGS}
1917
1918 \DeclareRobustCommand{\FDGS}
1919 {\{\textname{F}\}\DGS}
1920
1921 \DeclareRobustCommand{\EFDGS}
1922 {\ensuremath{\exists}\FDGS}
1923 \DeclareRobustCommand{\UFDGS}
1924 {\ensuremath{\forall}\FDGS}
1925
1926 % Alternating-Goal Strategy Logic
1927 \DeclareRobustCommandx{\AGSL}[3][1=, 2=, 3=]
1928 {\SL[#1][#2][ag\arglef{,}{#3}]}
1929
1930 \DeclareRobustCommand{\EAGSL}
1931 {\ensuremath{\exists}\AGSL}
1932 \DeclareRobustCommand{\UAGSL}
1933 {\ensuremath{\forall}\AGSL}
1934
1935 \DeclareRobustCommand{\FAGSL}
1936 {\{\textname{F}\}\AGSL}
1937

```

```

1938 \DeclareRobustCommand{\EFAGSL}
1939 {\ensuremath{\exists}\FAGSL}
1940 \DeclareRobustCommand{\UFAGSL}
1941 {\ensuremath{\forall}\FAGSL}
1942
1943 % Extended-Goal Strategy Logic
1944 \DeclareRobustCommandx{\EGSL}[3][1=, 2=, 3=]
1945 {\SL[#1][#2][eg\arglef{,}{#3}]}
1946
1947 \DeclareRobustCommand{\EEGSL}
1948 {\ensuremath{\exists}\EGSL}
1949 \DeclareRobustCommand{\UEGSL}
1950 {\ensuremath{\forall}\EGSL}
1951
1952 \DeclareRobustCommand{\FEGSL}
1953 {\{\txtname{F}\}\xGSL}
1954
1955 \DeclareRobustCommand{\EFEGSL}
1956 {\ensuremath{\exists}\FEGSL}
1957 \DeclareRobustCommand{\UFEGSL}
1958 {\ensuremath{\forall}\FEGSL}
1959
1960 % Boolean-Goal Strategy Logic
1961 \DeclareRobustCommandx{\BGSL}[3][1=, 2=, 3=]
1962 {\SL[#1][#2][bg\arglef{,}{#3}]}
1963
1964 \DeclareRobustCommand{\EBGSL}
1965 {\ensuremath{\exists}\BGSL}
1966 \DeclareRobustCommand{\UBGSL}
1967 {\ensuremath{\forall}\BGSL}
1968
1969 \DeclareRobustCommand{\FBGSL}
1970 {\{\txtname{F}\}\xGSL}
1971
1972 \DeclareRobustCommand{\EFBGSL}
1973 {\ensuremath{\exists}\FBGSL}
1974 \DeclareRobustCommand{\UFBGSL}
1975 {\ensuremath{\forall}\FBGSL}
1976
1977 % Nested-Goal Strategy Logic
1978 \DeclareRobustCommandx{\NGSL}[3][1=, 2=, 3=]
1979 {\SL[#1][#2][ng\arglef{,}{#3}]}
1980
1981 \DeclareRobustCommand{\ENGSL}
1982 {\ensuremath{\exists}\NGSL}
1983 \DeclareRobustCommand{\UNGSL}
1984 {\ensuremath{\forall}\NGSL}
1985
1986 \DeclareRobustCommand{\FNGSL}
1987 {\{\txtname{F}\}\xGSL}
1988
1989 \DeclareRobustCommand{\EFNGSL}
1990 {\ensuremath{\exists}\FNGSL}
1991 \DeclareRobustCommand{\UFNGSL}
1992 {\ensuremath{\forall}\FNGSL}
1993
1994 % Undefined-Goal Strategy Logic
1995 \DeclareRobustCommandx{\XGSL}[3][1=, 2=, 3=]
1996 {\SL[#1][#2][xg\arglef{,}{#3}]}
1997
1998 \DeclareRobustCommand{\EXGSL}
1999 {\ensuremath{\exists}\XGSL}
2000 \DeclareRobustCommand{\UXGSL}

```

```

2001 {\ensuremath{\forall}\XGSL}
2002
2003 \DeclareRobustCommand{\FXGSL}
2004 {\{\txtrname{F}\}\XGSL}
2005
2006 \DeclareRobustCommand{\EFXGSL}
2007 {\ensuremath{\exists}\FXGSL}
2008 \DeclareRobustCommand{\UFXGSL}
2009 {\ensuremath{\forall}\FXGSL}

2010 %** Syntax *****%%

\BndSet,
2011 \newcommand{\bndsym}{\flat}
2012 \newcommand{\bndset}{\Bn}
2013 \cmdmthsetext{Bnd}[\bndset][\bndsym]
2014 \usrmth{bnd}{\}{argfun}

\psn ...
2015 \usrmth{psn}{\}{argfun}

2016 %** Semantics *****%%

\nxtFun ...
2017 \newcommand{\nxtfun}{nxt}
2018 \cmdmthfun{nxt}[\nxtfun]

2019 \fi
2020 %*****%%
2021 %*****%%
2022 %** Macros for Automata *****%%
2023 %*****%%
2024 \ifaut@
2025 %** Finite Word Automata *****%%

\DFA,
2026 \cmdtxtoparname{DFA}\cmdtxtoparname{NFA}\cmdtxtoparname{UFA}\cmdtxtoparname{AFA}
2027
2028 \cmdtxtoparname{DWA}\cmdtxtoparname{NWA}\cmdtxtoparname{UWA}\cmdtxtoparname{AWA}
2029
2030 \cmdtxtoparname{DFW}\cmdtxtoparname{NFW}\cmdtxtoparname{UFW}\cmdtxtoparname{AFW}
2031 \cmdtxtoparname{DWW}\cmdtxtoparname{NWW}\cmdtxtoparname{UWW}\cmdtxtoparname{AWW}
2032 \cmdtxtoparname{DBW}\cmdtxtoparname{NBW}\cmdtxtoparname{UBW}\cmdtxtoparname{ABW}
2033 \cmdtxtoparname{DCW}\cmdtxtoparname{NCW}\cmdtxtoparname{UCW}\cmdtxtoparname{ACW}
2034 \cmdtxtoparname{DPW}\cmdtxtoparname{NPW}\cmdtxtoparname{UPW}\cmdtxtoparname{APW}
2035 \cmdtxtoparname{DRW}\cmdtxtoparname{NRW}\cmdtxtoparname{URW}\cmdtxtoparname{ARW}
2036 \cmdtxtoparname{DSW}\cmdtxtoparname{NSW}\cmdtxtoparname{USW}\cmdtxtoparname{ASW}
2037 \cmdtxtoparname{DMW}\cmdtxtoparname{NMW}\cmdtxtoparname{UMW}\cmdtxtoparname{AMW}

\GFG,
2038 \cmdtxtoparname{GFG}
2039
2040 \cmdtxtoparname{PD}
2041 \cmdtxtoparname{PN}
2042
2043 \cmdtxtoparname{LD}
2044 \cmdtxtoparname{LN}

2045 %** Syntax *****%%

\AutName,
2046 \newcommand{\autname}{A}
2047 \usrmthlatupp{Aut}{Name}{name}[\autname]
2048 \newcommand{\autset}{Aut}
2049 \cmdmthset{Aut}[\autset]

```

```

\WAutSet ...
2050 \newcommand{\wautset}{\WAut}
2051 \cmdmthset{WAut}[\wautset]

\SttSet,
2052 \def\sttsym{q}
2053 \def\sttset{Q}
2054 \cmdmthsetext{Stt}[\sttset][\sttsym]
2055 \cmdmthset{IStt}[\sttset_{I}]
2056 \cmdmthsymelm{istt}[\sttsym_{I}]
2057 \cmdmthset{FStt}[\sttset_{F}]
2058 \cmdmthsymelm{fstt}[\sttsym_{F}]

\SymSet,
2059 \newcommand{\symsym}{\sigma}
2060 \newcommand{\symset}{\Sigma}
2061 \cmdmthsetext{Sym}[\symset][\symsym]

\trnFun ...
2062 \newcommand{\trnsym}{\delta}
2063 \cmdmthfun{trn}[\trnsym]

2064 %** Semantics *****%%

\LangFun ...
2065 \newcommand{\langfun}{L}
2066 \cmdmthfun{Lang}[\langfun]

\WrdSet,
2067 \newcommand{\wrdsym}{w}
2068 \newcommand{\wrset}{Wr}
2069 \cmdmthsetext{Wrd}[\wrset][\wrdsym]

2070 %** Finite Tree Automata *****%%

\DTA,
2071 \cmdtxtoparname{DTA}\cmdtxtoparname{NTA}\cmdtxtoparname{UTA}\cmdtxtoparname{ATA}
2072
2073 \cmdtxtoparname{DFT}\cmdtxtoparname{NFT}\cmdtxtoparname{UFT}\cmdtxtoparname{AFT}
2074 \cmdtxtoparname{DWT}\cmdtxtoparname{NWT}\cmdtxtoparname{UWT}\cmdtxtoparname{AWT}
2075 \cmdtxtoparname{DBT}\cmdtxtoparname{NBT}\cmdtxtoparname{UBT}\cmdtxtoparname{ABT}
2076 \cmdtxtoparname{DCT}\cmdtxtoparname{NCT}\cmdtxtoparname{UCT}\cmdtxtoparname{ACT}
2077 \cmdtxtoparname{DPT}\cmdtxtoparname{NPT}\cmdtxtoparname{UPT}\cmdtxtoparname{APT}
2078 \cmdtxtoparname{DRT}\cmdtxtoparname{NRT}\cmdtxtoparname{URT}\cmdtxtoparname{ART}
2079 \cmdtxtoparname{DST}\cmdtxtoparname{NST}\cmdtxtoparname{UST}\cmdtxtoparname{AST}
2080 \cmdtxtoparname{DMT}\cmdtxtoparname{NMT}\cmdtxtoparname{UMT}\cmdtxtoparname{AMT}

2081 %** Syntax *****%%

\TAutSet ...
2082 \newcommand{\tautset}{\TAut}
2083 \cmdmthset{TAut}[\tautset]

\DirSet,
2084 \newcommand{\dirsym}{d}
2085 \newcommand{\dirset}{\Lambda}
2086 \cmdmthsetext{Dir}[\dirset][\dirsym]

2087 %** Semantics *****%%

\TreeSet,
2088 \newcommand{\treesym}{T}
2089 \newcommand{\treeset}{Tr}
2090 \cmdmthsetext{Tree}[\treeset][\treesym]

```

```

\wotFun ...
2091 \newcommand{\wotfun}{\wot}
2092 \cmdmthfun{\wot}[\wotfun]

2093 \fi
2094 %%*****%
2095 %%*****%
2096 %%** Format Tricks *****%
2097 %%*****%
2098 \iffirm@

...
2099 %%...

2100 \fi
2101 %%*****%
2102 %%*****%
2103 %%** Figure Tricks *****%
2104 %%*****%
2105 \iffig@

2106 \RequirePackage{tikz}
2107 \usetikzlibrary{arrows,graphs,matrix,patterns,shapes}

2108 \tikzstyle{every node} =
2109 [draw = none, fill = none, black, thin]
2110 \tikzstyle{every edge} +=
2111 [black, thick]

2112 \tikzstyle{noall} =
2113 [draw = none, fill = none]
2114 \tikzstyle{nodraw} =
2115 [draw = none, fill = white]
2116 \tikzstyle{nofill} =
2117 [draw = black, fill = none]

2118 \ifwrpfig@
2119 % Wrapfig Package
2120 \RequirePackage{wrapfig}
2121 \fi

2122 \fi
2123 %%*****%
2124 %%*****%
2125 %%** Table Tricks *****%
2126 %%*****%
2127 \iftab@

...
2128 %%...

2129 \fi
2130 %%*****%
2131 %%*****%
2132 %%** Algorithm Tricks *****%
2133 %%*****%
2134 \ifalg@

2135 \RequirePackage[ruled,vlined]{algorithm2e}
2136 \DontPrintSemicolon
2137 \SetInd{0.25em}{0.5em}
2138 \setlength{\algomargin}{1.25em}

\Signature ...
2139 \SetKw{Signature}{signature}

```



```

\Macro,
2140 \SetKwFor{Macro}{macro}{}{}
2141 \SetKwFor{Function}{function}{}{}
2142 \SetKwFor{Procedure}{procedure}{}{}

\Let ...
2143 \SetKwFor{Let}{let}{in}{}

\True, \False ...
2144 \SetKw{True}{true}
2145 \SetKw{False}{false}

\From,
2146 \SetKw{From}{from}
2147 \SetKw{To}{to}
2148 \SetKw{DownTo}{downto}

\GoTo,
2149 \SetKw{GoTo}{goto}
2150 \SetKw{Break}{break}
2151 \SetKw{Continue}{continue}

\MIf,
2152 \SetKwIF{MIf}{MElseIf}{MElse}{\#if}{\#then}{\#else \#if}{\#else}{\#endif}

\nlr ...
2153 \DeclareRobustCommand{\nlr}[1]
2154 {\addtocounter{AlgoLine}{1}%
2155 \nlset{\arabic{AlgoLine}-\addtocounter{AlgoLine}{#1}\arabic{AlgoLine}}}

2156 \fi
2157 %%*****%
2158 \endinput
2159 \</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                   | v0.20 | General: New binary operators . . . . . 1                     |
| v0.11 | General: Few additions and corrections . . . . . 1       | v0.3  | General: Few problems solved . . . . . 1                      |
| v0.12 | General: New starred variants . . . . . 1                | v0.4  | General: Refactoring, corrections, and extensions . . . . . 1 |
| v0.13 | General: Further starred variants . . . . . 1            | v0.5  | General: Figure tricks . . . . . 1                            |
| v0.14 | General: Few additions and corrections . . . . . 1       | v0.6  | General: Small refinements . . . . . 1                        |
| v0.15 | General: Refactoring of dtx sources . . . . . 1          | v0.7  | General: Refinements, corrections, and extensions . . . . . 1 |
| v0.16 | General: Small refinements and few additions . . . . . 1 | v0.8  | General: Few refinements and corrections . . . . . 1          |
| v0.17 | General: Few additions . . . . . 1                       | v0.9  | General: Small addition to ‘Algorithm tricks’ . . . . . 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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