

Package **innerscript** v. 1.0 Documentation

Conrad Kosowsky

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`kosowsky.latex@gmail.com`

For easy, off-the-shelf use, type the following in your document preamble and compile using Lua \TeX :

```
\usepackage{innerscript}
```

Abstract

The **mathinner** package modifies two aspects of \TeX 's automatic interatom mathematics spacing. The package uses Lua \TeX 's `\Umath` primitives to make superscripts and subscripts more closely resemble `\textstyle` and `\displaystyle` math and to treat `\mathinner` subformulas as `\mathord`, effectively eliminating this class. Users must load **innerscript** with the Lua \TeX engine.

Keywords: superscript, subscript, spacing, **mathinner**, `scriptstyle`, `scriptscriptstyle`, Lua \TeX , `Umath`, `atom`

For several years now, I wondered whether it was possible to change two features of \TeX 's mathematics spacing routine, namely the lack of automatic spacing in subscripts and superscripts and the extra space around `\mathinner` subformulas. For example, compare

$$\sum_{i=1}^n x_i^{1+a} \qquad f(x) = g\left(\frac{1}{x}\right) \qquad (1)$$

$$\sum_{i=1}^n x_i^{1+a} \qquad f(x) = g\left(\frac{1}{x}\right). \qquad (2)$$

Equation (1) uses traditional \TeX spacing, and equation (2) incorporates small adjustments. On the left, the subscript under the summation symbol and the superscript of x_i contain small amounts of extra space around the = and + signs respectively, and on the right, the g is directly next to the parenthesis instead of being an extra `\thinmuskip` away. In traditional \TeX , automating these changes would be impossible to do easily, but Lua \TeX 's extra math-mode primitives provide direct access to the interatom space parameters.¹ The **innerscript** package is my attempt to automate the changes in equation (2) using `\Umath` spacing commands, and as far as I am aware, it is the first package to do so. (Although please let me know if this is incorrect!) It provides no user-level commands and alters spacing automatically. This file explains how to load the package and documents the internal code.

Users can load **innerscript** with the standard

```
\usepackage[\langle options \rangle]{innerscript}
```

syntax. As mentioned previously, the package must be loaded with Lua \TeX , and if it de-

¹See section 7.5 of the Lua \TeX manual.

Table 1: Package Options for `innerscript`

Package Option	Meaning
<code>script</code>	Changes to <code>\scriptstyle</code> and <code>\crampedscriptstyle</code> spacing
<code>scriptscript</code>	Changes to <code>\scriptscriptstyle</code> and <code>\crampedscriptscriptstyle</code> spacing
<code>inner</code>	Treat <code>\mathinner</code> subformulas as <code>\mathord</code>
<code>no-script</code>	No changes to <code>\scriptstyle</code> and <code>\crampedscriptstyle</code> spacing
<code>no-scriptscript</code>	No changes to <code>\scriptscriptstyle</code> and <code>\crampedscriptscriptstyle</code> spacing
<code>no-inner</code>	No changes to treatment of <code>\mathinner</code> subformulas

ffects a different engine, `innerscript` will issue an error.² It is possible to continue compiling past the error with no other issues, but if you do, `innerscript` will not be able to change any math spacing in your document. Table 1 shows the six package options, and by default `innerscript` selects the first three. The `script` and `scriptscript` options will affect spacing of symbols in superscripts and subscripts, and the `inner` option will eliminate extra spacing for `\mathinner` subformulas, such as fractions and `\left-\right` delimiter pairs. The `no-` variants disable the spacing adjustments for the corresponding default option.

In standard mathematics typesetting, \TeX uses different font sizes for different portions of math lists, and it chooses a certain size based on the math style currently in use.³ \TeX uses `\displaystyle` and `\textstyle` as the default for display and inline math respectively, and while in either of these styles or the corresponding cramped versions, it adds extra space between symbols of certain math classes.⁴ \TeX switches to `\scriptstyle`, `\scriptscriptstyle`, or the corresponding cramped versions to typeset superscripts and subscripts, and in doing so, it forgoes most of the spacing additions from `\textstyle`.

The `script` and `scriptscript` options reverse this decision by forcing interatom spacing to more closely resemble that of `\textstyle`. Table 2 lists the amount of space that `innerscript` inserts between various pairs of math classes for each option, and adjustments of this type will resemble the changes to the summation from equation (2). The `inner` package option forces all spacing around `\mathinner` subformulas to take the value it would if the formula had type `\mathord`. Traditionally \TeX places more space around `\mathinner` subformulas than it does around `\mathord` atoms, so loading `innerscript` with `inner` will remove a certain amount of space from math formulas. Changes of this type will typically resemble

²Specifically, `innerscript` checks whether `\Umathordordspacing` is defined.

³The eight math styles are `\displaystyle`, `\textstyle`, `\scriptstyle`, `\scriptscriptstyle`, and cramped versions of those four, where the control sequence begins with the word “cramped.” Technically a math style is an instruction to pull math symbols from a specific font associated with a math family and to apply certain rules for assembling formulas to this part of the math list. See Donald Knuth, *The \TeX book*, (Addison Wesley, 1986), 140–143, 441–447; David Salomon, *The Advanced \TeX book*, (Springer, 1995), 254–256.

⁴The eight classes are `\mathord`, `\mathop`, `\mathbin`, `\mathrel`, `\mathopen`, `\mathclose`, `\mathpunct`, and `\mathinner`. They are specific to particular symbols and determine spacing in math formulas. As part of its definition, every math symbol is associated with a certain math class. See Donald Knuth, *The \TeX book*, 170; David Salomon, *The Advanced \TeX book*, 256–258.

Table 2: Spacing Inserted by `innerscript` between Consecutive Atoms

Consecutive Atom Types	Option <code>script</code>	Option <code>scriptscript</code>
<code>\mathord\mathop</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathord\mathbin</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathord\mathrel</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathord\mathinner</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathop\mathord</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathop\mathop</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathop\mathrel</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathop\mathinner</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathbin\mathord</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathbin\mathop</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathbin\mathopen</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathbin\mathinner</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathrel\mathord</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathrel\mathop</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathrel\mathopen</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathrel\mathinner</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathclose\mathop</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathclose\mathbin</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathclose\mathrel</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathclose\mathinner</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathord</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathop</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathrel</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathopen</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathclose</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathpunct</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathpunct\mathinner</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathinner\mathord</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathinner\mathop</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathinner\mathbin</code>	0.7 <code>\thinmuskip</code>	0.5 <code>\thinmuskip</code>
<code>\mathinner\mathrel</code>	<code>\thinmuskip</code>	0.7 <code>\thinmuskip</code>
<code>\mathinner\mathopen</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathinner\mathpunct</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>
<code>\mathinner\mathinner</code>	0.6 <code>\thinmuskip</code>	0.4 <code>\thinmuskip</code>

the adjustment to the function g from equation (2). Users who want to further change the spacing in their math formulas should manually add `glue`, `muglue`, or `\kern` to their math lists or provide new values for the `\Umath` spacing parameters in their document preamble.

Finally, we come to the implementation, and we begin by declaring the package. The conditionals `\ifIS@script`, `\ifIS@scriptscript`, and `\ifIS@inner` encode option information, and we set them according to the user’s option declaration.

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{innerscript}[2021/02/03 v. 1.0 Package innerscript]
3 \newif\ifIS@script\IS@scripttrue
4 \newif\ifIS@scriptscript\IS@scriptscripttrue
5 \newif\ifIS@inner\IS@innertrue
6 \DeclareOption{script}{\IS@scripttrue}
7 \DeclareOption{scriptscript}{\IS@scriptscripttrue}
8 \DeclareOption{inner}{\IS@innertrue}
9 \DeclareOption{no-script}{\IS@scriptfalse}
10 \DeclareOption{no-scriptscript}{\IS@scriptscriptfalse}
11 \DeclareOption{no-inner}{\IS@innerfalse}
12 \ProcessOptions*

```

Check whether `\Umathordordspacing` is defined. If not, issue an error and `\endinput`. We won't be able to print multiple spaces at once because \TeX collapses multiple space characters, so within a group, we change `+` to active and define it to be a space.

```

13 \ifx\Umathordordspacing\@undefined
14   \bgroup\catcode`\+=13
15   \def+{ }
16   \def\IS@LuaTeXError{\GenericError{
17     {\MessageBreak\MessageBreak
18       Package innerscript error:
19       \MessageBreak\MessageBreak
20       +++++\MessageBreak
21       +++++\MessageBreak
22       +++++CANNOT LOAD++++\MessageBreak
23       +++++INNERSCRIPT++++\MessageBreak
24       +++++LuaTeX Needed+++ \MessageBreak
25       +++++\MessageBreak
26       +++++\MessageBreak\@gobbletwo}
27     {See the innerscript package documentation for explanation.}
28     {I need LuaTeX to make the innerscript package work. It\MessageBreak
29       looks like the current engine is something else, so I\MessageBreak
30       can't load the package file. To use innerscript, please\MessageBreak
31       typeset with LuaLaTeX. To continue without innerscript,\MessageBreak
32       press return.}}
33   \IS@LuaTeXError
34   \egroup
35   \expandafter\endinput% we \endinput with a balanced conditional
36 \fi

```

First we set the spacing for `\scriptstyle` and `\crampedscriptstyle` atoms. Each command has the form

$$\Umath\langle\math\ classes\rangle\mathrm{spacing}\langle\math\ style\rangle=\langle factor\rangle\mathrm{thinmuskip},$$

where the *math classes* are a pair of choices from `ord`, `op`, `bin`, `rel`, `open`, `close`, `punct`, and `inner`. The *math style* is either `scriptstyle` or `crampedscriptstyle`, and the *factor* corresponds to the spacing listed in Table 2. We set the `\scriptstyle` and `\scriptscriptstyle` spacing before handling `\mathinner` subformulas because we want to use updated spac-

ing values for the `\mathinner` space adjustments. Otherwise, the `\scriptstyle` and `\scriptscriptstyle` adjustments will override changes to `\mathinner` spacing.

```

37 \ifIS@script
38   \wlog{Package innerscript Info:
39     Adjusting spacing for \string\scriptstyle.}
40   \Umathordopspacing\scriptstyle=0.6\thinmuskip
41   \Umathordbinspacing\scriptstyle=0.7\thinmuskip
42   \Umathordrelspacing\scriptstyle=\thinmuskip
43   \Umathordinnerspacing\scriptstyle=0.6\thinmuskip
44   \Umathopordspacing\scriptstyle=0.6\thinmuskip
45   \Umathopopspacing\scriptstyle=0.6\thinmuskip
46   \Umathoprelspacing\scriptstyle=\thinmuskip
47   \Umathopinnerspacing\scriptstyle=\thinmuskip
48   \Umathbinordspacing\scriptstyle=0.7\thinmuskip
49   \Umathbinopspacing\scriptstyle=0.7\thinmuskip
50   \Umathbinopenspacing\scriptstyle=0.7\thinmuskip
51   \Umathbininnerspacing\scriptstyle=0.7\thinmuskip
52   \Umathrelordspacing\scriptstyle=\thinmuskip
53   \Umathrelopspacing\scriptstyle=\thinmuskip
54   \Umathrelopenspacing\scriptstyle=\thinmuskip
55   \Umathrelinnerspacing\scriptstyle=\thinmuskip
56   \Umathcloseopspacing\scriptstyle=0.6\thinmuskip
57   \Umathclosebinspacing\scriptstyle=0.7\thinmuskip
58   \Umathcloserelspacing\scriptstyle=\thinmuskip
59   \Umathcloseinnerspacing\scriptstyle=0.6\thinmuskip
60   \Umathpunctordspacing\scriptstyle=0.6\thinmuskip
61   \Umathpunctopspacing\scriptstyle=0.6\thinmuskip
62   \Umathpunctrelspacing\scriptstyle=0.6\thinmuskip
63   \Umathpunctopenspacing\scriptstyle=0.6\thinmuskip
64   \Umathpunctclosespacing\scriptstyle=0.6\thinmuskip
65   \Umathpunctpunctspacing\scriptstyle=0.6\thinmuskip
66   \Umathpunctinnerspacing\scriptstyle=0.6\thinmuskip
67   \Umathinnerordspacing\scriptstyle=0.6\thinmuskip
68   \Umathinneropspacing\scriptstyle=0.6\thinmuskip
69   \Umathinnerbinspacing\scriptstyle=0.7\thinmuskip
70   \Umathinnerrelspacing\scriptstyle=\thinmuskip
71   \Umathinneropopenspacing\scriptstyle=0.6\thinmuskip
72   \Umathinnerpunctspacing\scriptstyle=0.6\thinmuskip
73   \Umathinnerinnerspacing\scriptstyle=0.6\thinmuskip
74   \wlog{Package innerscript Info:
75     Adjusting spacing for \string\crampedscriptstyle.}
76   \Umathordopspacing\crampedscriptstyle=0.6\thinmuskip
77   \Umathordbinspacing\crampedscriptstyle=0.7\thinmuskip
78   \Umathordrelspacing\crampedscriptstyle=\thinmuskip
79   \Umathordinnerspacing\crampedscriptstyle=0.6\thinmuskip
80   \Umathopordspacing\crampedscriptstyle=0.6\thinmuskip
81   \Umathopopspacing\crampedscriptstyle=0.6\thinmuskip

```

```

82 \Umathoprelspacing\crampedscriptstyle=\thinmuskip
83 \Umathopinnerspacing\crampedscriptstyle=\thinmuskip
84 \Umathbinordspacing\crampedscriptstyle=0.7\thinmuskip
85 \Umathbinopspacing\crampedscriptstyle=0.7\thinmuskip
86 \Umathbinopenspacing\crampedscriptstyle=0.7\thinmuskip
87 \Umathbininnerspacing\crampedscriptstyle=0.7\thinmuskip
88 \Umathrelordspacing\crampedscriptstyle=\thinmuskip
89 \Umathrelopspacing\crampedscriptstyle=\thinmuskip
90 \Umathrelopenspacing\crampedscriptstyle=\thinmuskip
91 \Umathrelinnerspacing\crampedscriptstyle=\thinmuskip
92 \Umathcloseopspacing\crampedscriptstyle=0.6\thinmuskip
93 \Umathclosebinspacing\crampedscriptstyle=0.7\thinmuskip
94 \Umathcloserelspacing\crampedscriptstyle=\thinmuskip
95 \Umathcloseinnerspacing\crampedscriptstyle=0.6\thinmuskip
96 \Umathpunctordspacing\crampedscriptstyle=0.6\thinmuskip
97 \Umathpunctopspacing\crampedscriptstyle=0.6\thinmuskip
98 \Umathpunctrelspacing\crampedscriptstyle=0.6\thinmuskip
99 \Umathpunctopenspacing\crampedscriptstyle=0.6\thinmuskip
100 \Umathpunctclosespacing\crampedscriptstyle=0.6\thinmuskip
101 \Umathpunctpunctspacing\crampedscriptstyle=0.6\thinmuskip
102 \Umathpunctinnerspacing\crampedscriptstyle=0.6\thinmuskip
103 \Umathinnerordspacing\crampedscriptstyle=0.6\thinmuskip
104 \Umathinneropspacing\crampedscriptstyle=0.6\thinmuskip
105 \Umathinnerbinspacing\crampedscriptstyle=0.7\thinmuskip
106 \Umathinnerrelspacing\crampedscriptstyle=\thinmuskip
107 \Umathinneropenspacing\crampedscriptstyle=0.6\thinmuskip
108 \Umathinnerpunctspacing\crampedscriptstyle=0.6\thinmuskip
109 \Umathinnerinnerspacing\crampedscriptstyle=0.6\thinmuskip
110 \fi

```

Set the spacing for `\scriptscriptstyle` and `\crampedscriptscriptstyle`. The process is the same as it was for `\scriptstyle` except with different `\muskip` *factors*.

```

111 \ifIS@scriptscript
112   \wlog{Package innerscript Info:
113     Adjusting spacing for \string\scriptscriptstyle.}
114   \Umathordopspacing\scriptscriptstyle=0.4\thinmuskip
115   \Umathordbinspacing\scriptscriptstyle=0.5\thinmuskip
116   \Umathordrelspacing\scriptscriptstyle=0.7\thinmuskip
117   \Umathordinnerspacing\scriptscriptstyle=0.4\thinmuskip
118   \Umathopordspacing\scriptscriptstyle=0.4\thinmuskip
119   \Umathopopspacing\scriptscriptstyle=0.4\thinmuskip
120   \Umathoprelspacing\scriptscriptstyle=0.7\thinmuskip
121   \Umathopinnerspacing\scriptscriptstyle=0.7\thinmuskip
122   \Umathbinordspacing\scriptscriptstyle=0.5\thinmuskip
123   \Umathbinopspacing\scriptscriptstyle=0.5\thinmuskip
124   \Umathbinopenspacing\scriptscriptstyle=0.5\thinmuskip
125   \Umathbininnerspacing\scriptscriptstyle=0.5\thinmuskip
126   \Umathrelordspacing\scriptscriptstyle=0.7\thinmuskip

```

```

127 \Umathreltopspacing\scriptscriptstyle=0.7\thinmuskip
128 \Umathreltopspacing\scriptscriptstyle=0.7\thinmuskip
129 \Umathrelinnerspacing\scriptscriptstyle=0.7\thinmuskip
130 \Umathcloseopspacing\scriptscriptstyle=0.4\thinmuskip
131 \Umathclosebinspacing\scriptscriptstyle=0.5\thinmuskip
132 \Umathcloserelspacing\scriptscriptstyle=0.7\thinmuskip
133 \Umathcloseinnerspacing\scriptscriptstyle=0.4\thinmuskip
134 \Umathpunctordspacing\scriptscriptstyle=0.4\thinmuskip
135 \Umathpunctopspacing\scriptscriptstyle=0.4\thinmuskip
136 \Umathpunctrelspacing\scriptscriptstyle=0.4\thinmuskip
137 \Umathpunctopspacing\scriptscriptstyle=0.4\thinmuskip
138 \Umathpunctclosespacing\scriptscriptstyle=0.4\thinmuskip
139 \Umathpunctpunctspacing\scriptscriptstyle=0.4\thinmuskip
140 \Umathpunctinnerspacing\scriptscriptstyle=0.4\thinmuskip
141 \Umathinnerordspacing\scriptscriptstyle=0.4\thinmuskip
142 \Umathinneropspacing\scriptscriptstyle=0.4\thinmuskip
143 \Umathinnerbinspacing\scriptscriptstyle=0.5\thinmuskip
144 \Umathinnerrelspacing\scriptscriptstyle=0.7\thinmuskip
145 \Umathinneropspacing\scriptscriptstyle=0.4\thinmuskip
146 \Umathinnerpunctspacing\scriptscriptstyle=0.4\thinmuskip
147 \Umathinnerinnerspacing\scriptscriptstyle=0.4\thinmuskip
148 \wlog{Package innerscript Info:
149   Adjusting spacing for \string\crampedscriptscriptstyle.}
150 \Umathordopspacing\crampedscriptscriptstyle=0.4\thinmuskip
151 \Umathordbinspacing\crampedscriptscriptstyle=0.5\thinmuskip
152 \Umathordrelspacing\crampedscriptscriptstyle=0.7\thinmuskip
153 \Umathordinnerspacing\crampedscriptscriptstyle=0.4\thinmuskip
154 \Umathopordspacing\crampedscriptscriptstyle=0.4\thinmuskip
155 \Umathopopspacing\crampedscriptscriptstyle=0.4\thinmuskip
156 \Umathoprelspacing\crampedscriptscriptstyle=0.7\thinmuskip
157 \Umathopinnerspacing\crampedscriptscriptstyle=0.7\thinmuskip
158 \Umathbinordspacing\crampedscriptscriptstyle=0.5\thinmuskip
159 \Umathbinopspacing\crampedscriptscriptstyle=0.5\thinmuskip
160 \Umathbinopspacing\crampedscriptscriptstyle=0.5\thinmuskip
161 \Umathbininnerspacing\crampedscriptscriptstyle=0.5\thinmuskip
162 \Umathrelordspacing\crampedscriptscriptstyle=0.7\thinmuskip
163 \Umathreltopspacing\crampedscriptscriptstyle=0.7\thinmuskip
164 \Umathreltopspacing\crampedscriptscriptstyle=0.7\thinmuskip
165 \Umathrelinnerspacing\crampedscriptscriptstyle=0.7\thinmuskip
166 \Umathcloseopspacing\crampedscriptscriptstyle=0.4\thinmuskip
167 \Umathclosebinspacing\crampedscriptscriptstyle=0.5\thinmuskip
168 \Umathcloserelspacing\crampedscriptscriptstyle=0.7\thinmuskip
169 \Umathcloseinnerspacing\crampedscriptscriptstyle=0.4\thinmuskip
170 \Umathpunctordspacing\crampedscriptscriptstyle=0.4\thinmuskip
171 \Umathpunctopspacing\crampedscriptscriptstyle=0.4\thinmuskip
172 \Umathpunctrelspacing\crampedscriptscriptstyle=0.4\thinmuskip
173 \Umathpunctopspacing\crampedscriptscriptstyle=0.4\thinmuskip

```

```

174 \Umathpunctclosespace\crampedscriptscriptstyle=0.4\thinmuskip
175 \Umathpunctpunctspacing\crampedscriptscriptstyle=0.4\thinmuskip
176 \Umathpunctinnerspace\crampedscriptscriptstyle=0.4\thinmuskip
177 \Umathinnerordspacing\crampedscriptscriptstyle=0.4\thinmuskip
178 \Umathinneropspacing\crampedscriptscriptstyle=0.4\thinmuskip
179 \Umathinnerbinspace\crampedscriptscriptstyle=0.5\thinmuskip
180 \Umathinnerrelspacing\crampedscriptscriptstyle=0.7\thinmuskip
181 \Umathinneropspacing\crampedscriptscriptstyle=0.4\thinmuskip
182 \Umathinnerpunctspacing\crampedscriptscriptstyle=0.4\thinmuskip
183 \Umathinnerinnerspace\crampedscriptscriptstyle=0.4\thinmuskip
184 \fi

```

Now set the spacing for `\mathinner` subformulas. Each command has the form

$$\begin{aligned} &\backslash\mathrm{Umath}\langle\mathit{math\ class}\rangle\mathrm{innerspace}\backslash\langle\mathit{math\ style}\rangle= \\ &\quad\backslash\mathrm{Umath}\langle\mathit{math\ class}\rangle\mathrm{ordspace}\backslash\langle\mathit{math\ style}\rangle \end{aligned}$$

or

$$\begin{aligned} &\backslash\mathrm{Umathinner}\langle\mathit{math\ class}\rangle\mathrm{space}\backslash\langle\mathit{math\ style}\rangle= \\ &\quad\backslash\mathrm{Umathord}\langle\mathit{math\ class}\rangle\mathrm{space}\backslash\langle\mathit{math\ style}\rangle, \end{aligned}$$

where *math class* is one of `ord`, `op`, `bin`, `rel`, `open`, `close`, `punct`, or `inner`. The *math style* is either `displaystyle`, `textstyle`, `scriptstyle`, `scriptscriptstyle`, or the cramped version of any of those four.

```

185 \ifIS@inner
186 \wlog{Package innerscript Info:
187   Adjusting spacing for \string\mathinner.}
188 \Umathordinnerspace\displaystyle=
189 \Umathordordspace\displaystyle
190 \Umathordinnerspace\textstyle=
191 \Umathordordspace\textstyle
192 \Umathordinnerspace\scriptstyle=
193 \Umathordordspace\scriptstyle
194 \Umathordinnerspace\scriptscriptstyle=
195 \Umathordordspace\scriptscriptstyle
196 \Umathordinnerspace\crampeddisplaystyle=
197 \Umathordordspace\crampeddisplaystyle
198 \Umathordinnerspace\crampedtextstyle=
199 \Umathordordspace\crampedtextstyle
200 \Umathordinnerspace\crampedscriptstyle=
201 \Umathordordspace\crampedscriptstyle
202 \Umathordinnerspace\crampedscriptscriptstyle=
203 \Umathordordspace\crampedscriptscriptstyle
204 \Umathopinnerspace\displaystyle=
205 \Umathopordspace\displaystyle
206 \Umathopinnerspace\textstyle=
207 \Umathopordspace\textstyle
208 \Umathopinnerspace\scriptstyle=
209 \Umathopordspace\scriptstyle

```



```

210 \Umathopinnerspacing\scriptscriptstyle=
211 \Umathopordspacing\scriptscriptstyle
212 \Umathopinnerspacing\crampeddisplaystyle=
213 \Umathopordspacing\crampeddisplaystyle
214 \Umathopinnerspacing\crampedtextstyle=
215 \Umathopordspacing\crampedtextstyle
216 \Umathopinnerspacing\crampedscriptstyle=
217 \Umathopordspacing\crampedscriptstyle
218 \Umathopinnerspacing\crampedscriptscriptstyle=
219 \Umathopordspacing\crampedscriptscriptstyle
220 \Umathbininnerspacing\displaystyle=
221 \Umathbinordspacing\displaystyle
222 \Umathbininnerspacing\textstyle=
223 \Umathbinordspacing\textstyle
224 \Umathbininnerspacing\scriptstyle=
225 \Umathbinordspacing\scriptstyle
226 \Umathbininnerspacing\scriptscriptstyle=
227 \Umathbinordspacing\scriptscriptstyle
228 \Umathbininnerspacing\crampeddisplaystyle=
229 \Umathbinordspacing\crampeddisplaystyle
230 \Umathbininnerspacing\crampedtextstyle=
231 \Umathbinordspacing\crampedtextstyle
232 \Umathbininnerspacing\crampedscriptstyle=
233 \Umathbinordspacing\crampedscriptstyle
234 \Umathbininnerspacing\crampedscriptscriptstyle=
235 \Umathbinordspacing\crampedscriptscriptstyle
236 \Umathrelinnerspacing\displaystyle=
237 \Umathrelordspacing\displaystyle
238 \Umathrelinnerspacing\textstyle=
239 \Umathrelordspacing\textstyle
240 \Umathrelinnerspacing\scriptstyle=
241 \Umathrelordspacing\scriptstyle
242 \Umathrelinnerspacing\scriptscriptstyle=
243 \Umathrelordspacing\scriptscriptstyle
244 \Umathrelinnerspacing\crampeddisplaystyle=
245 \Umathrelordspacing\crampeddisplaystyle
246 \Umathrelinnerspacing\crampedtextstyle=
247 \Umathrelordspacing\crampedtextstyle
248 \Umathrelinnerspacing\crampedscriptstyle=
249 \Umathrelordspacing\crampedscriptstyle
250 \Umathrelinnerspacing\crampedscriptscriptstyle=
251 \Umathrelordspacing\crampedscriptscriptstyle
252 \Umathopeninnerspacing\displaystyle=
253 \Umathopenordspacing\displaystyle
254 \Umathopeninnerspacing\textstyle=
255 \Umathopenordspacing\textstyle
256 \Umathopeninnerspacing\scriptstyle=

```

```

257 \Umathopenordspacing\scriptstyle
258 \Umathopeninnerspacing\scriptscriptstyle=
259 \Umathopenordspacing\scriptscriptstyle
260 \Umathopeninnerspacing\crampeddisplaystyle=
261 \Umathopenordspacing\crampeddisplaystyle
262 \Umathopeninnerspacing\crampedtextstyle=
263 \Umathopenordspacing\crampedtextstyle
264 \Umathopeninnerspacing\crampedscriptstyle=
265 \Umathopenordspacing\crampedscriptstyle
266 \Umathopeninnerspacing\crampedscriptscriptstyle=
267 \Umathopenordspacing\crampedscriptscriptstyle
268 \Umathcloseinnerspacing\displaystyle=
269 \Umathcloseordspacing\displaystyle
270 \Umathcloseinnerspacing\textstyle=
271 \Umathcloseordspacing\textstyle
272 \Umathcloseinnerspacing\scriptstyle=
273 \Umathcloseordspacing\scriptstyle
274 \Umathcloseinnerspacing\scriptscriptstyle=
275 \Umathcloseordspacing\scriptscriptstyle
276 \Umathcloseinnerspacing\crampeddisplaystyle=
277 \Umathcloseordspacing\crampeddisplaystyle
278 \Umathcloseinnerspacing\crampedtextstyle=
279 \Umathcloseordspacing\crampedtextstyle
280 \Umathcloseinnerspacing\crampedscriptstyle=
281 \Umathcloseordspacing\crampedscriptstyle
282 \Umathcloseinnerspacing\crampedscriptscriptstyle=
283 \Umathcloseordspacing\crampedscriptscriptstyle
284 \Umathpunctinnerspacing\displaystyle=
285 \Umathpunctordspacing\displaystyle
286 \Umathpunctinnerspacing\textstyle=
287 \Umathpunctordspacing\textstyle
288 \Umathpunctinnerspacing\scriptstyle=
289 \Umathpunctordspacing\scriptstyle
290 \Umathpunctinnerspacing\scriptscriptstyle=
291 \Umathpunctordspacing\scriptscriptstyle
292 \Umathpunctinnerspacing\crampeddisplaystyle=
293 \Umathpunctordspacing\crampeddisplaystyle
294 \Umathpunctinnerspacing\crampedtextstyle=
295 \Umathpunctordspacing\crampedtextstyle
296 \Umathpunctinnerspacing\crampedscriptstyle=
297 \Umathpunctordspacing\crampedscriptstyle
298 \Umathpunctinnerspacing\crampedscriptscriptstyle=
299 \Umathpunctordspacing\crampedscriptscriptstyle
300 \Umathinnerordspacing\displaystyle=
301 \Umathordordspacing\displaystyle
302 \Umathinnerordspacing\textstyle=
303 \Umathordordspacing\textstyle

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304 \Umathinnerordspacing\scriptstyle=
305 \Umathordordspacing\scriptstyle
306 \Umathinnerordspacing\scriptscriptstyle=
307 \Umathordordspacing\scriptscriptstyle
308 \Umathinnerordspacing\crampeddisplaystyle=
309 \Umathordordspacing\crampeddisplaystyle
310 \Umathinnerordspacing\crampedtextstyle=
311 \Umathordordspacing\crampedtextstyle
312 \Umathinnerordspacing\crampedscriptstyle=
313 \Umathordordspacing\crampedscriptstyle
314 \Umathinnerordspacing\crampedscriptscriptstyle=
315 \Umathordordspacing\crampedscriptscriptstyle
316 \Umathinneropspacing\displaystyle=
317 \Umathordopspacing\displaystyle
318 \Umathinneropspacing\textstyle=
319 \Umathordopspacing\textstyle
320 \Umathinneropspacing\scriptstyle=
321 \Umathordopspacing\scriptstyle
322 \Umathinneropspacing\scriptscriptstyle=
323 \Umathordopspacing\scriptscriptstyle
324 \Umathinneropspacing\crampeddisplaystyle=
325 \Umathordopspacing\crampeddisplaystyle
326 \Umathinneropspacing\crampedtextstyle=
327 \Umathordopspacing\crampedtextstyle
328 \Umathinneropspacing\crampedscriptstyle=
329 \Umathordopspacing\crampedscriptstyle
330 \Umathinneropspacing\crampedscriptscriptstyle=
331 \Umathordopspacing\crampedscriptscriptstyle
332 \Umathinnerbinspacing\displaystyle=
333 \Umathordbinspacing\displaystyle
334 \Umathinnerbinspacing\textstyle=
335 \Umathordbinspacing\textstyle
336 \Umathinnerbinspacing\scriptstyle=
337 \Umathordbinspacing\scriptstyle
338 \Umathinnerbinspacing\scriptscriptstyle=
339 \Umathordbinspacing\scriptscriptstyle
340 \Umathinnerbinspacing\crampeddisplaystyle=
341 \Umathordbinspacing\crampeddisplaystyle
342 \Umathinnerbinspacing\crampedtextstyle=
343 \Umathordbinspacing\crampedtextstyle
344 \Umathinnerbinspacing\crampedscriptstyle=
345 \Umathordbinspacing\crampedscriptstyle
346 \Umathinnerbinspacing\crampedscriptscriptstyle=
347 \Umathordbinspacing\crampedscriptscriptstyle
348 \Umathinnerrelspacing\displaystyle=
349 \Umathordrelspacing\displaystyle
350 \Umathinnerrelspacing\textstyle=

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351 \Umathordrelspacing\textstyle
352 \Umathinnerrelspacing\scriptstyle=
353 \Umathordrelspacing\scriptstyle
354 \Umathinnerrelspacing\scriptscriptstyle=
355 \Umathordrelspacing\scriptscriptstyle
356 \Umathinnerrelspacing\crampeddisplaystyle=
357 \Umathordrelspacing\crampeddisplaystyle
358 \Umathinnerrelspacing\crampedtextstyle=
359 \Umathordrelspacing\crampedtextstyle
360 \Umathinnerrelspacing\crampedscriptstyle=
361 \Umathordrelspacing\crampedscriptstyle
362 \Umathinnerrelspacing\crampedscriptscriptstyle=
363 \Umathordrelspacing\crampedscriptscriptstyle
364 \Umathinneropenspacing\displaystyle=
365 \Umathordopenspacing\displaystyle
366 \Umathinneropenspacing\textstyle=
367 \Umathordopenspacing\textstyle
368 \Umathinneropenspacing\scriptstyle=
369 \Umathordopenspacing\scriptstyle
370 \Umathinneropenspacing\scriptscriptstyle=
371 \Umathordopenspacing\scriptscriptstyle
372 \Umathinneropenspacing\crampeddisplaystyle=
373 \Umathordopenspacing\crampeddisplaystyle
374 \Umathinneropenspacing\crampedtextstyle=
375 \Umathordopenspacing\crampedtextstyle
376 \Umathinneropenspacing\crampedscriptstyle=
377 \Umathordopenspacing\crampedscriptstyle
378 \Umathinneropenspacing\crampedscriptscriptstyle=
379 \Umathordopenspacing\crampedscriptscriptstyle
380 \Umathinnerclosespacing\displaystyle=
381 \Umathordclosespacing\displaystyle
382 \Umathinnerclosespacing\textstyle=
383 \Umathordclosespacing\textstyle
384 \Umathinnerclosespacing\scriptstyle=
385 \Umathordclosespacing\scriptstyle
386 \Umathinnerclosespacing\scriptscriptstyle=
387 \Umathordclosespacing\scriptscriptstyle
388 \Umathinnerclosespacing\crampeddisplaystyle=
389 \Umathordclosespacing\crampeddisplaystyle
390 \Umathinnerclosespacing\crampedtextstyle=
391 \Umathordclosespacing\crampedtextstyle
392 \Umathinnerclosespacing\crampedscriptstyle=
393 \Umathordclosespacing\crampedscriptstyle
394 \Umathinnerclosespacing\crampedscriptscriptstyle=
395 \Umathordclosespacing\crampedscriptscriptstyle
396 \Umathinnerpunctspacing\displaystyle=
397 \Umathordpunctspacing\displaystyle

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398 \Umathinnerpunctspacing\textstyle=
399   \Umathordpunctspacing\textstyle
400 \Umathinnerpunctspacing\scriptstyle=
401   \Umathordpunctspacing\scriptstyle
402 \Umathinnerpunctspacing\scriptscriptstyle=
403   \Umathordpunctspacing\scriptscriptstyle
404 \Umathinnerpunctspacing\crampeddisplaystyle=
405   \Umathordpunctspacing\crampeddisplaystyle
406 \Umathinnerpunctspacing\crampedtextstyle=
407   \Umathordpunctspacing\crampedtextstyle
408 \Umathinnerpunctspacing\crampedscriptstyle=
409   \Umathordpunctspacing\crampedscriptstyle
410 \Umathinnerpunctspacing\crampedscriptscriptstyle=
411   \Umathordpunctspacing\crampedscriptscriptstyle
412 \Umathinnerinnerspacing\displaystyle=
413   \Umathordordspacing\displaystyle
414 \Umathinnerinnerspacing\textstyle=
415   \Umathordordspacing\textstyle
416 \Umathinnerinnerspacing\scriptstyle=
417   \Umathordordspacing\scriptstyle
418 \Umathinnerinnerspacing\scriptscriptstyle=
419   \Umathordordspacing\scriptscriptstyle
420 \Umathinnerinnerspacing\crampeddisplaystyle=
421   \Umathordordspacing\crampeddisplaystyle
422 \Umathinnerinnerspacing\crampedtextstyle=
423   \Umathordordspacing\crampedtextstyle
424 \Umathinnerinnerspacing\crampedscriptstyle=
425   \Umathordordspacing\crampedscriptstyle
426 \Umathinnerinnerspacing\crampedscriptscriptstyle=
427   \Umathordordspacing\crampedscriptscriptstyle
428 \fi

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