

# THE SPBMARK PACKAGE

V1.1C      2021/08/10

Customize superscript and subscript

Qu Yi

<https://github.com/texl3/spbmark>

[queel23@foxmail.com](mailto:queel23@foxmail.com)

spbmark provides three commands `\super`, `\sub` and `\supersub` to improve the layout of superscript and subscript which can be adjusted the relative position and format, and can be used in text and math mode.

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## 1 Macro package options

`ctex` (required)  
This option works with the C<sub>T</sub><sub>E</sub>X document class used by simplified Chinese users, there's actually no functional change. Adding path `style` to `\ctexset` command, which is equivalent to using `\spbset`.

`newsupb = true|false` Default: true  
`newsupb` is a boolean option with a default value of true that redefines the L<sup>A</sup>T<sub>E</sub>X kernel commands to cause `\sp` and `\textsuperscript` are equivalent to `\super` command, and `\sb` and `\textsubscript` are equivalent to `\sub` command.

## 2 User commands

There are currently three commands to set superscript and subscript. Their format can be set temporarily using the optional parameters of the command, or set globally using a key-value list, see section 3.

`\super*[\langle vshift \rangle][\langle height \rangle, \langle depth \rangle](\langle code \rangle)\{\langle content \rangle\}[\langle hshift \rangle]`

This is a superscript output command. If  $\langle vshift \rangle$  or  $\langle hshift \rangle$  is a positive value, the superscript moves up or to the right, if it's negative, the superscript moves down or to the left.

`\sub*[\langle vshift \rangle][\langle height \rangle, \langle depth \rangle](\langle code \rangle)\{\langle content \rangle\}[\langle hshift \rangle]`

This is a subscript output command. If  $\langle vshift \rangle$  or  $\langle hshift \rangle$  is a positive value, the subscript moves down or to the right, if it's negative, the subscript moves up or to the left.

`\supersub*[\langle vsep \rangle](\langle align \rangle)\{\langle sup cont \rangle\}\{\langle sub cont \rangle\}[\langle hshift \rangle](\langle sup code \rangle, \langle sub code \rangle)`

This is a command that outputs both superscript and subscript at the same time. You can also use the shorter command `\spb` instead of it. The  $\langle vsep \rangle$  represents the vertical spacing between superscript and subscript, same as option `supersubsep`. The parameters of  $\langle align \rangle$  are the same as the `supersubalign`.

These commands can match the corresponding pattern depending on whether they are currently in text mode or mathematical mode, or they can use an asterisk variant to force the mathematical pattern.

The optional parameter  $\langle height \rangle, \langle depth \rangle$  generally does not need to be used. The  $\langle height \rangle$  and  $\langle depth \rangle$  are separated by commas. Only the front part indicates the  $\langle height \rangle$  of the superscript or subscript, and only the back part indicates the  $\langle depth \rangle$ .

The  $\langle code \rangle$  is used to format superscript and subscript, and can insert commands such as fonts or colors. The last command in the code can take an argument, which is either a superscript or a subscript.

If you need to use the original definitions of `\textsuperscript`, `\textsubscript`, `\sp` and `\sb` after using the `newsup` option, then you can use the following commands:

`\spb@textsuperscript@save{\langle content \rangle}`

Save the original definition of the `\textsuperscript` command, output superscript in the text.

`\spb@textsubscript@save{\langle content \rangle}`

Save the original definition of the `\textsubscript` command, output subscript in the text.

`\spb@sp@save{\langle content \rangle}`

Save the original definition of the `\sp` command, output superscript in the math mode.

`\spb@sb@save{\langle content \rangle}`

Save the original definition of the `\sb` command, output subscript in the math mode.

### 3 Global control interface

`\spbset{\langle key-value list \rangle}`

spbmark uses the `\spbset` command to control the global default format of superscript and subscript. The values set by it will be overwritten by the optional parameters of the superscript and other commands.

The following list of keys control the format both of superscript or subscript. They are equivalent to the optional parameters of the `\super` or `\sub` commands.

`super-vshift = {⟨fixed length⟩}` Default: 0pt  
Extra vertical shift of the superscript.

`super-hshift = {⟨fixed length⟩}` Default: 0pt  
Extra horizontal shift of the superscript.

`sub-vshift = {⟨fixed length⟩}` Default: 0pt  
Extra vertical shift of the subscript.

`sub-hshift = {⟨fixed length⟩}` Default: 0pt  
Extra horizontal shift of the subscript.

`nohshift` (required)  
Cancel the horizontal offset of superscript and subscript at the same time.

`novshift` (required)  
Cancel the vertical offset of superscript and subscript at the same time.

`super-format = {⟨format code⟩}` (initially empty)  
Control the format of superscript, the last command in the code can take an argument, which is a superscript.

`sub-format = {⟨format code⟩}` (initially empty)  
Control the format of subscript, the last command in the code can take an argument, which is a subscript.

The following list of keys control the format of superscript and subscript. They are equivalent to the optional parameters of the `\supersub` command.

`supersub-hshift = {⟨fixed length⟩}` Default: 0pt  
Extra vertical shift of the superscript and the subscript.

`supersub-format = {⟨super code⟩,⟨sub code⟩}` Default: 0pt  
Control the format of superscript or subscript. The first part is in superscript format, and the latter part is in subscript format. The two are separated by commas, or only the first part exists.

`supersubsep = {⟨fixed length⟩}` Default: 0.3ex  
The distance between superscript and subscript, its default value is 0.3ex.

`supersubalign = l|c|r` Default: l  
The alignment of superscript and subscript, which contains l, c, and r parameters respectively for left, center, and right alignment.

## 4 Examples of use

Here is a list of the three commands, please pay attention to the delimiter and usage of optional parameters. Note when the horizontal offset is negative, the starting point is at the right end of the mark.

```
\spbset{supersub-format = {\ttfamily,\color{blue}}}
A\super[0.2ex](\textcolor{red}){exam}[0.2em]B \
$A\sub(\mathsf){exam}B$ \
A\supersub[0.3ex](c){examsuper}{sub}B \
A\super[5pt]{c}[-1.5pt]B\sub[5pt]{d}[-1pt]AB
```

---

$A^{\text{exam}}B$   
 $A_{\text{exam}}B$   
 $A_{\text{examsuper}}^{\text{sub}}B$   
 $A_{\text{c}}^{\text{sub}}B$   
 $A_{\text{d}}B$

It can also be used with the siunitx package to output superscript and subscript in the unit:

```
\unit[mode = math]{kg.m/s\super*[-1pt]{2}} \
\qty[mode = text]{30}{A\supersub{b}{c}[1pt](\color{red})} \
\spbset{sub-hshift = 2pt}\unit[mode = text]{A_b}
```

---

$\text{kg m/s}^2$   
 $30 A_{\text{c}}^{\text{b}}$   
 $A_{\text{b}}$

spbmark also patches the footer markers for standard document class and KOMA-Script. You can format the footer markers by redefining the `\fnmarkfont` command. Note that extra horizontal shift does not work with footnote markers.

## 5 Known issues

At present, the vertical and horizontal offsets are effective for the unit commands in the siunitx macro package. However, due to the special mechanism that the decimal point is not recognized correctly because it's converted to a space in the `\unit` command, it's recommended to use pt as the unit of offset.

## References

- [Rob16] Will ROBERTSON. realscripts. version 0.3d, Feb. 13, 2016 (or newer).  
 URL: <https://ctan.org/pkg/realscripts>.

## *References*

- [Wri21] Joseph WRIGHT. siunitx. version 3.0.22, July 22, 2021 (or newer).  
URL: <https://ctan.org/pkg/siunitx>.

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