

The `genellipsis` package

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Abstract

This package addresses the need to regularly type ellipses. The default configuration produces ellipses such as $1, 2, \dots, n$, including `\linebreaks` after each comma and is as simple to use as `\lip{1, 2,, n}`. An useful feature is that `\lip` takes an optional command to customize each value in the ellipsis.

1 Introduction

Documents about mathematics often make use of set extensions such as $\{1, 2, \dots, n\}$, or maybe $\{\mathbf{h}(A_1^2), \mathbf{h}(A_2^2), \dots, \mathbf{h}(A_n^2)\}$. To produce such sets the following commands are typically used:

```
\{1, 2, \dots, n\}
```

This formulation suffers from the drawback that it is unbreakable, resulting in frequent Overfull `\hboxes` problems. One way to circumvent this is to add `\allowbreak` commands after each comma, which is not really practical.

The `\lip` command is mainly a convenience command that eases typesetting such lists of values separated by some token (a comma by default). As its name suggests, it also comes with higher order separators which are dots by default. More interestingly, it also allows to apply a macro to each element. Hence the second example given above was produced using:

```
\lip |\mathbf{h}(A_{#1}^2)| {1, 2,, n}
```

Note that the command makes use of some argument `#1`, and that nesting calls to `\lip` needs some extra care. Each inner level needs doubling the number of hash signs, and extra braces are needed so that pipes are parsed correctly. For example:

$$\{a_1, a_2, \dots, a_5\} \cup \{a_1, a_2, \dots, a_6\} \cup \{a_1, a_2, \dots, a_7\}$$

```
\lip[sep=\cup] |\lip[sep={,}] |a_{##1}| {1, 2,, #1}\}
```

2 The `\lip` command

In its simplest form, `\lip` takes a list of comma-separated values. Each empty value will be replaced with an ellipsis (by default dots, see Section 3.3).

<code>\$\lip {1, 2, 3}\$</code>	$1, 2, 3$
<code>\$\lip {1, 2,, n}\$</code>	$1, 2, \dots, n$
<code>\$\lip {a, b,, g, h,, z}\$</code>	$a, b, \dots, g, h, \dots, z$
<code>\$\lip {, 1, 2,, n}\$</code>	$\dots, 1, 2, \dots, n$
<code>\$\lip {1, 2,, n,}\$</code>	$1, 2, \dots, n, \dots$
<code>\$\lip {, -1, 0, 1, }\$</code>	$\dots, -1, 0, 1, \dots$

One may use the `\lip` command in text mode.

<code>\lip {A, B, C}</code>	A, B, C
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It is also possible to provide a command that will transform each of the values. The command has to be given just before the values, between two vertical bars. This command should use the `#1` as the value being stylized.

<code>\$\lip A_{#1} {1, 2,, n}</code>	A_1, A_2, \dots, A_n
<code>\$\lip X {1, 2, 3}\$</code>	X, X, X

3 The options

The following options may be set for the whole \TeX group using the `\lipsetdefault` command, or locally within the `\lip` command, as shown in the examples.

3.1 `allowbreak (= true)`

You can disable this feature using `\lipsetdefaultallowbreak=false` and then use `\lip[allowbreak]` when you want ellipses to be breakable.

<code>\$\lip [allowbreak=false]</code> <code> longlongthing {1, 2, 3, 4,</code> <code>5}\$</code>	$longlongthing, longlongthing, longlongthing, longlongthing,$
<code>\$\lip [allowbreak]</code> <code> longlongthing {1, 2, 3,</code> <code>4, 5}\$</code>	$longlongthing, longlongthing,$ $longlongthing, longlongthing,$ $longlongthing$

3.2 sep (= ,)

Sets the separator between values.

<code>\$\lip [sep=\cup] {A, B,,</code>	$A \cup B \cup \dots \cup K$
<code>K}\$</code>	

3.3 lip (= ...)

Sets the ellipsis command(s).

<code>\$\lip [lip=\cdots] {a, b,,</code>	a, b, \dots, c, d
<code>c, d}\$</code>	
