Sample document

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1 LLAlignAnd

$$\texttt{\&=} \qquad \begin{aligned} a &= b \\ c &= d \end{aligned} \qquad \text{ok}$$

$$\texttt{=\&} \qquad \begin{aligned} a =& b \\ c =& d \end{aligned} \qquad \text{ng}$$

$$\texttt{=\{\}\&} \qquad \begin{aligned} a = & b \\ c = & d \end{aligned} \qquad \text{ok}$$

$$x = y \qquad x \leq y \qquad x \leq y \qquad x < y \qquad x > y \qquad x \geq y \qquad x \approx y$$
$$x \neq y \qquad x \geq y \qquad x \geq y \qquad x > y \qquad x < y \qquad x \leq y \qquad x \asymp y$$

verbatim does not care about this rule: `a =& b`

2 LLAlignEnd

The following ends with a line break.

$$\begin{aligned} f(x) &= ax^2 + bx + c \\ g(x) &= dx^2 + ex + f \end{aligned}$$

The following does not end with a line break.

$$\begin{aligned} f(x) &= ax^2 + bx + c \\ g(x) &= dx^2 + ex + f \end{aligned}$$

Here is the next line after the align environment.

3 LLAlignSingleLine

─────── Long line before display (same result) ───────

Lorem ipsum.   Lorem ipsum.

$$f(x) = ax^2 + bx + c$$ $$f(x) = ax^2 + bx + c$$

This is an equation environment.   This is an align environment.

─────── Short line before display (different result) ───────

Lrm: Lrm:

$$f(x) = ax^2 + bx + c$$

This is an equation environment.

$$f(x) = ax^2 + bx + c$$

This is an align environment.

Single-line alignat environment is also detected.

$$f(x) = ax^2 + bx + c$$

Multi-line alignat environment is not detected.

$$f(x) = ax^2 + bx + c$$
$$g(x) = dx^2 + ex + f$$

4 LLArticle

A n-dimensional space. An n-dimensional space.

5 LLBig

This is a sample text. This is a sample text. This is a sample text.
Both bigcup $\bigcup_{x \in B} O_x$ and cup $\cup_{x \in B} O_x$ do not spoil the line spacing.
This is a sample text. This is a sample text. This is a sample text.

$$X_1 \cap X_2 \quad X_1 \cup X_2 \quad X_1 \odot X_2 \quad X_1 \oplus X_2 \quad X_1 \otimes X_2$$
$$X_1 \sqcup X_2 \quad X_1 \uplus X_2 \quad X_1 \vee X_2 \quad X_1 \wedge X_2 \quad \text{ok}$$

$$\bigcap_{i=1}^{\infty} X_i \quad \bigcup_{i=1}^{\infty} X_i \quad \bigodot_{i=1}^{\infty} X_i \quad \bigoplus_{i=1}^{\infty} X_i \quad \bigotimes_{i=1}^{\infty} X_i \quad \bigsqcup_{i=1}^{\infty} X_i \quad \biguplus_{i=1}^{\infty} X_i \quad \bigvee_{i=1}^{\infty} X_i \quad \bigwedge_{i=1}^{\infty} X_i \quad \text{ok}$$

$$\cap_{i=1}^{\infty} X_i \quad \cup_{i=1}^{\infty} X_i \quad \odot_{i=1}^{\infty} X_i \quad \oplus_{i=1}^{\infty} X_i \quad \otimes_{i=1}^{\infty} X_i$$
$$\sqcup_{i=1}^{\infty} X_i \quad \uplus_{i=1}^{\infty} X_i \quad \vee_{i=1}^{\infty} X_i \quad \wedge_{i=1}^{\infty} X_i \quad \text{ng}$$

`\max(a,b)`	$\max(a,b)$	ok
`\max{a,b}`	$\max a, b$	ng
`\max {a,b}`	$\max a, b$	ok?

6 LLBracketCurly

We cannot fully determine whether the use of curly brackets is wrong or not. It is not detected if some spaces are inserted between the command name and the curly brackets.
$\min(a,b)$ and $\min a, b$ are also checked.

7 LLBracketMissing

`x^{23}`	x^{23}	ok
`x^2 3`	$x^2 3$	ok
`x^23`	$x^2 3$	ng

$x_2 3$, $x^a b$, and $x_a b$ are also checked. Cases like $x^a b$, x^2 , and $e^i \pi$ are not detected.
Following examples are ignored.

```
escaped underscore: \_123
https://sample_url.com
\includegraphics{sample_link.png}
\includegraphics{sample_link.pdf}
\label{sample_label}
\cref{sample_label}
\eqref{sample_label}
\cite{sample_label}
\Cref{sample_Label}
\bibliography{abc_def}
\bibliographystyle{my_style}
\addbibresource{ref_file.bib}
% x^23 comment
```

8 LLBracketRound

`\sqrt{a}`	$\sqrt{a}$	ok
`\sqrt(a)`	$\sqrt{}(a)$	ng

$a^(1)$ and $a_(1)$ are also checked.
Following examples are ignored.

```
\includegraphics{sample_(1).png}
\label{eq:f(x_(k+1))<=m(x_(k+1))<=m(x_k)=f(x_k)}
```

9   LLColonEqq

`\coloneqq`	$x \coloneqq y$	ok
`\Coloneqq`	$x \Coloneqq y$	ok
`:=`	$x := y$	ng
`::=`	$x ::= y$	ng

The difference is quite subtle, but the vertical position of the colon is different.

10   LLColonForMapping

`A:B`	$A : B$	ok
`A\colon B`	$A\colon B$	ok?
`f:`	$f : \mathbb{R} \to \mathbb{R}$	ng
`f\colon`	$f\colon \mathbb{R} \to \mathbb{R}$	ok

— We detect all of : in the following —

Here are examples of colons we detect.

- $f : X \to Y$

- $g : X \mapsto Y$

- $h : \mathbb{R}^{n^2 + 2n + 1} \to \mathbb{R}$

and

$$f : (X \text{ at new line in tex file}) \to (Y \text{ at new line in tex file}). \tag{1}$$

— We do NOT detect any of : in the following —

Here are examples of ':' we do not detect.

- $f\colon X \to Y$, the correct use of \colon.

- $A : B : C = 1 : 2 : 3$, the colon for ratio.

- $A : B = 1 : 2$ and $X \to Y$, separated by dollar sign.

- $g : ($some very very very very very long long long long words$) \to \mathbb{R}$, the false negative.

---

11   LLCref

Theorem 1. *This is a sample theorem.*

Use Thm. 1 with cref instead of Thm. 1 with ref to avoid mistakes. Disabled by default.

12   LLDoubleQuotes

Use "XXX" instead of "XXX" or "XXX". You can use them for H\"older and \verb.

13   LLENDash

```
hyphen (-)      A-B
en-dash (--)    A–B
em-dash (---)   A—B
```

Examples:

- Erdos-Renyi (random graph, Erdős–Rényi)

- Einstein-Podolsky-Rosen (quantum physics, Einstein–Podolsky–Rosen)

- Fruchterman-Reingold (graph drawing, Fruchterman–Reingold)

- Gauss-Legendre (numerical integration, Gauss–Legendre)

- Gibbs-Helmholtz (thermodynamics, Gibbs–Helmholtz)

- Karush-Kuhn-Tucker (optimization, Karush–Kuhn–Tucker)

Exceptions: Non-Negative, Well-Known, etc.

14   LLEqnarray

We should not use eqnarray. It has some spacing issues.

$$x = y$$
$$a = b$$

15   LLFootnote

When we use footnotes in a new line. [1] The footnote marker position is incorrect. When we added a percentage sign.[2] The footnote marker position is correct.

---

[1] This is a footnote.

[2] This is a footnote.

16   LLHeading

16.0.1   Incorrect Hierarchy

16.1   First Subsection

16.1.1   Second Subsubsection

17   LLJapaneseSpace

日本語の文章で$x = 1$と数式を書くと、スペースが欠如します。
日本語の文章で $x = 1$ と数式を書くと、スペースが生まれます。
尤も、フォーマルな文章では非推奨な場合もあり、その為デフォルトでは非検出です。

18   LLLlGg

`\ll`	$n \ll m$	ok
`<<`	$n << m$	ng

I like human <<< cat <<<<<<< dog.

19   LLNonASCII

The following line contains non-ASCII characters.
　！＂＃＄％＆＇（）＊＋－／

日本語の文章は、upLaTeXでフツウに書けます。
(You can write Japanese sentences as usual with upLaTeX.)

20   LLPeriod

`e.g., test.`	e.g., test.	ok
`e.g.\ test.`	e.g. test.	ok
`e.g. test.`	e.g. test.	ng

21   LLRefEq

To refer to the equation, use (1) with eqref instead of (1) with ref.
You can avoid the mistake of forgetting to add parentheses.

22   LLSharp

`\#`	$\#A$	ok
`\sharp`	$\sharp A$	ng

- matching examples: $\sharp A$, $\sharp\{1,2,3\}$, $\sharp X_0$

- non-matching examples: $\sharp$, $f^{\sharp}$, $\alpha^{\sharp}$, $C\,\sharp$

If you really want to use $\sharp$, you can disable this rule.

23 LLSI

`\SI{1}{\kilo\byte}`	1 kB	ok
`1 kB`	1 kB	ng
`1kB`	1kB	ng

10KB, 3.5 MiB, 500GB are detected. 123 noNumWord GB will not be detected. Some command named as EB. This is not ExaByte. This 1EB is one ExaByte.

24 LLSortedCites

Unsorted citations: [2, 1].

25 LLT

`^\top`	$X^{\top}$	ok
`^{\mathsf{T}}`	X^{T}	ok
`^T`	X^T	ng
`^{T}`	X^T	ok?

26 LLThousands

`1,000`	1,000	ok
`$1{,}000$`	1,000	ok
`$1,000$`	1,000	ng

27 LLTitle

27.1 This Is a Correct Title

27.1.1 this is a wrong title

The quick brown fox jumps over the lazy dog

SubParagraph: Test With Ref 1

27.2   IGNORE IF ALL UPPERCASE

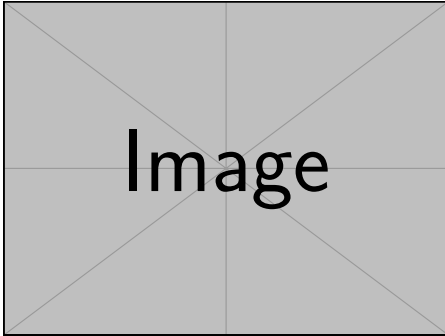## 27.3   Math Contains version x
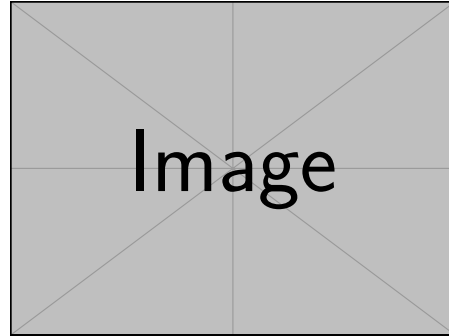
28   LLUnRef

Figure 1: Referenced Figure

Figure 2: Unreferenced Figure

Fig. 1 is referenced in the text, while the other figure is not.

29   LLURL

The following URLs contain unnecessary query strings (should be detected):

- `https://example.com/page?utm_source=newsletter&utm_medium=email`
- `https://example.com/page?sessionid=123456`
- `https://example.com/page?user=alice`
- `https://example.com/page?email=alice@example.com`

The following URLs contain only allowed query strings (should not be detected):

- `https://example.com/search?q=latex`
- `https://example.com/list?page=2`
- `https://example.com/view?lang=ja`

Examples of URLs without query strings:

- `https://example.com/clean-page`

30   LLUserDefined

You can define your own rule.

`f^\mathrm{a}(x)`	$f^{\mathrm{a}}(x)$	ok
`f^a(x)`	$f^{a}(x)$	ng

8

```
f \infConv g    f □ g    ok
f \Box g         f □ g    ng
```

References

[1] Boli. *Sample Book*. Publishing Example, City, 2000.

[2] Hari. Sample article. *Journal of Examples*, 1(1):123–456, 2000.

Appendix A   Bugs

ToDo: Fix This.

```
 "double quotes in verbatim"
```

```
def test ():
        S = "double quotes in listing"
```

Appendix B   LLSetBar

Detecting inappropriate use of the vertical bar | is very difficult. We are currently trying to detect the following, although not implemented yet.

`\lvert -1 \rvert`	$\lvert{-1}\rvert$	ok
`\abs{-1}`	$\lvert{-1}\rvert$	ok
`\vert -1 \vert`	$\lvert -1 \rvert$	ng
`|-1|`	$\lvert -1 \rvert$	ng

`\lVert -x \rVert`	$\lVert{-x}\rVert$	ok
`\norm{-x}`	$\lVert{-x}\rVert$	ok
`\Vert -x \Vert`	$\lVert -x \rVert$	ng
`||-x||`	$\lVert -x \rVert$	ng

`\relmiddle|` (macro)	$\left\{a \,\middle\|\, a > \dfrac{1}{2}\right\}$	ok
`\mid`	$\{a \mid a > \dfrac{1}{2}\}$	ok?
`|`	$\{a\|a > \dfrac{1}{2}\}$	ng

`\divides` (MnSymbol)	$+2 \mid +4$	ok
`\mid`	$+2 \mid +4$	ok?
`\mathrel|`	$+2 \mid +4$	ok?
`\vert`	$+2\|+4$	ng
`|`	$+2\|+4$	ng

`f(y|x)`	$f(y\|x)$	ok?
`f(y \mid x)`	$f(y \mid x)$	ok?
`f(\,y\mid x\,)`	$f(\,y \mid x\,)$	ok?
`\left. \dv{t} \right|_{t=0} f(t)`	$\left.\frac{\mathrm{d}}{\mathrm{d}t}\right\|_{t=0} f(t)$	ok?