

# physml.sty: An Infrastructure for Marking Up PhysML in T<sub>E</sub>X/L<sup>A</sup>T<sub>E</sub>X\*

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## Abstract

The `physml` package allows mark up PhysML structures in L<sup>A</sup>T<sub>E</sub>X documents that can be harvested by automated tools or exported to PDF, while at the same time generating conventional title information.

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\*Version ? (last revised ?)

# 1 Introduction

The `physml` package is part of the  $\text{\LaTeX}$  project (see [sTeX:online; Koh08]) and extends  $\text{\LaTeX}$  with an infrastructure for creating PhysML markup [; HKS06] from  $\text{\LaTeX}$  sources.

## 2 The User Interface

<sup>1</sup>

### 2.1 Package Options

`showmeta` The `physml` package takes a single option: `showmeta`. If this is set, then the metadata keys are shown (see [Koh15] for details and customization options).

### 2.2 Observables

### 2.3 Systems

### 2.4 Values

### 2.5 Experiments

## 3 Limitations

In this section we document known limitations. If you want to help alleviate them, please feel free to contact the package author. Some of them are currently discussed in the  $\text{\LaTeX}$  GitHub repository [sTeX].

1. none reported yet

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<sup>1</sup>EdNOTE: document the functionality here

## 4 The Implementation

### 4.1 Package Options

We declare some switches which will modify the behavior according to the package options. Generally, an option xxx will just set the appropriate switches to true (otherwise they stay false).<sup>2</sup>

```
1 <*package>
2 \DeclareOption{showmeta}{\PassOptionsToPackage{\CurrentOption}{metakeys}}
3 \ProcessOptions
4 \RequirePackage{sref}
```

physml

```
5 <package>\newcommand\physml{PhysML}
```

### 4.2 Observables

observable

```
6 \srefaddidkey{obs}
7 \addmetakey{obs}{algebra}
8 \newenvironment{observable}[1] [] % keyword args
9 {\metasetkeys{obs}{#1}{\bf{Observable (\obs@id):}}\begin{description}}
10 {\end{description}}
11 \newcommand\obsref[1]{ref: #1}
```

refinement

```
12 \srefaddidkey{refinement}
13 \newenvironment{refinement}[1] [] {\item[Refinement]}{}
```

opdef

```
14 \newenvironment{opdef}[1] [] {\item[Opdef:]}{}
```

### 4.3 Systems

system

```
15 \srefaddidkey{system}
16 \newenvironment{system}[1] [] % keyword args
17 {\metasetkeys{system}{#1}{\bf{System (\system@id):}}\begin{description}}
18 {\end{description}}
```

3

```
19 \newcommand\sysref[1]{ref: #1}
```

realization

```
20 \newenvironment{realization}[1] [] {\item[Realization]}{}
```

---

<sup>2</sup>EDNOTE: need an implementation for L<sup>A</sup>T<sub>E</sub>XML

<sup>3</sup>EDNOTE: need to implement this in L<sup>A</sup>T<sub>E</sub>XML

preparation

```
21 \newenvironment{preparation}[1] [] {\item[Preparation]}{}
```

state

```
22 \srefaddidkey{state}
23 \addmetakey{state}{of}
24 \newenvironment{state}[1] [] % keyword args
25 {\bf{State:}}{\par\noindent}
```

## 4.4 Values

statevalue

```
26 \newcommand\statevalue[2]{\tt{#1}}$\rightarrow$\tt{#2}}
27 % \srefaddidkey{value}
28 % \addmetakey{value}{for}
29 % \newenvironment{value}[1] [] % keyword args
30 % {\bf{Value:}}{\par\noindent}
```

## 4.5 Experiments

measurement

```
31 \srefaddidkey{measurement}
32 \newenvironment{measurement}[1] [] % keyword args
33 {\bf{Measurement:}}{\par\noindent}
```

experiment

```
34 \srefaddidkey{experiment}
35 \newenvironment{experiment}[1] [] % keyword args
36 {\bf{Experiment:}}{\par\noindent}
```

evidence

```
37 \srefaddidkey{evidence}
38 \newenvironment{evidence}[1] [] % keyword args
39 {\bf{Evidence:}}{\par\noindent}
```

interpretation

```
40 \srefaddidkey{interpretation}
41 \newenvironment{interpretation}[1] [] % keyword args
42 {\bf{Interpretation:}}{\par\noindent}
43 \end{package}
```

## References

[] *PhysML – Capturing the Content of Physics*. URL: <http://www.omdoc.org/projects/physml/>.

- [HKS06] Eberhard Hilf, Michael Kohlhase, and Heinrich Stamerjohanns. “Capturing the Content of Physics: Systems, Observables, and Experiments”. In: *Mathematical Knowledge Management (MKM)*. Ed. by Jon Borwein and William M. Farmer. LNAI 4108. Springer Verlag, 2006, pp. 165–178. URL: <http://kwarc.info/kohlhase/papers/mkm06physml.pdf>.
- [Koh08] Michael Kohlhase. “Using L<sup>A</sup>T<sub>E</sub>X as a Semantic Markup Format”. In: *Mathematics in Computer Science 2.2* (2008), pp. 279–304. URL: <https://svn.kwarc.info/repos/stex/doc/mcs08/stex.pdf>.
- [Koh15] Michael Kohlhase. *metakeys.sty: A generic framework for extensible Metadata in L<sup>A</sup>T<sub>E</sub>X*. Tech. rep. Comprehensive T<sub>E</sub>X Archive Network (CTAN), 2015. URL: <http://www.ctan.org/tex-archive/macros/latex/contrib/stex/metakeys/metakeys.pdf>.
- [sTeX] *KWARC/sTeX*. URL: <https://svn.kwarc.info/repos/stex> (visited on 05/15/2015).