

# pathsuris.sty: Paths and URIs for $\text{\LaTeX}$ \*

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## Abstract

This package provides macros to deal with paths and base URIs for  $\text{\LaTeX}$ . In particular, it offers a path canonicalizer, which is used in package `modules`, in order to support modules specified with relative path.

## Contents

<b>1</b>	<b>User Interface</b>	<b>2</b>
1.1	Base URIs . . . . .	2
1.2	Using Absolute Paths . . . . .	2
1.3	Path Canonicalization . . . . .	2
1.4	URI splitting . . . . .	2
<b>2</b>	<b>The Implementation</b>	<b>4</b>
2.1	Base URIs . . . . .	4
2.2	Using Absolute Paths . . . . .	4
2.3	Path Canonicalization . . . . .	4
2.4	URI splitting . . . . .	6

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# 1 User Interface

## 1.1 Base URIs

`\baseURI` `\baseURI`<sup>1</sup>

## 1.2 Using Absolute Paths

Finally, the separation of documents into multiple modules often profits from a symbolic management of file paths. To simplify this, the `modules` package supplies the `\defpath` macro: `\defpath[\langle baseURI \rangle]{\langle cname \rangle}{\langle path \rangle}` defines a command, so that `\langle cname \rangle{\langle name \rangle}` expands to `\langle path \rangle/\langle name \rangle`. So we could have used

```
\defpath{OPaths}{../other}
\importmodule[load=\OPahts{bar}]{bar}
```

instead of the second line in Example ???. The variant `\OPaths` has the big advantage that we can get around the fact that  $\text{\TeX}/\text{\LaTeX}$  does not set the current directory in `\input`, so that we can use systematically deployed `\defpath`-defined path macros to make modules relocatable by defining the path macros locally. The optional parameter `\langle baseURI \rangle` is for the L<sup>A</sup>T<sub>E</sub>XML transformation, which (if `\langle baseURI \rangle` is specified) resolves `\langle path \rangle` to an absolute URI according to [BFM05, section 5.2].

## 1.3 Path Canonicalization

By calling `\@cpath{\langle path \rangle}`, the canonicalized path will be stored in `\@CanPath`. To print a canonicalized path, simply use `\cpath{\langle path \rangle}`. Here is a set of examples with their canonizalized paths for testing.

path	canonicalized path	expected
aaa	aaa	aaa
../../aaa	../../aaa	../../aaa
aaa/bbb	aaa/bbb	aaa/bbb
aaa/..		
../../aaa/bbb	../../aaa/bbb	../../aaa/bbb
../aaa/..bbb	../bbb	../bbb
../aaa/bbb	../aaa/bbb	../aaa/bbb
aaa/bbb/..ddd	aaa/ddd	aaa/ddd
aaa/bbb/../..		

## 1.4 URI splitting

By calling `\seturi[\meta{macroname}]{\langle path \rangle}`, the URI will be plit into `\macronamescheme`, `\macronameauthority`, `\macronamepath`, `\macronamequery`

---

<sup>1</sup>EdNOTE: document it

and `\macronamefragment`, as in the following example. If the optional `macroname` is not provided, the default name is `pathsuris@curruri@`.

```
\seturi[myuri]{http://this.isatest/foo/bar/?query#fragment}
```

yields:

macro	value
<code>\myurischeme</code>	http
<code>\myuriauthority</code>	this.isatest
<code>\myuripath</code>	foo/bar/
<code>\myuriquery</code>	query
<code>\myurifragment</code>	fragment

## 2 The Implementation

```

1 \langle *package\rangle
2 \RequirePackage{stex-base}
3 \RequirePackage{xstring}
4 \RequirePackage{etoolbox}

```

### 2.1 Base URIs

`\baseURI` On the L<sup>A</sup>T<sub>E</sub>X side we do nothing (for the moment).

```

5 \newcommand\baseURI[2] [] {}

```

### 2.2 Using Absolute Paths

`\defpath` `\defpath[optional argument]{macro name}{base path}` defines a new macro which can take another path to form one integrated path. For example, `\MathHub` in every `localpaths.tex` is defined as:

```

\defpath{MathHub}{/path/to/localmh/MathHub}

```

then we can use `\MathHub` to form other paths, for example,

```

\MathHub{source/smgglom/sets}

```

will generate `/path/to/localmh/MathHub/source/smgglom/sets`.

```

6 \newrobustcmd\defpath[3] [] {%
7   \expandafter\newcommand\csname #2\endcsname[1] {#3/##1}%
8 }%

```

### 2.3 Path Canonicalization

We define two macros for changing the category codes of common characters in URIs, in particular `#`.

```

9 \def\pathsuris@setcatcodes{%
10   \edef\pathsuris@oldcatcode@hash{\the\catcode'\#}%
11   \catcode'\#=12\relax%
12   \edef\pathsuris@oldcatcode@slash{\the\catcode'\/%}
13   \catcode'\/=12\relax%
14   \edef\pathsuris@oldcatcode@colon{\the\catcode'\:%}
15   \catcode'\:=12\relax%
16   \edef\pathsuris@oldcatcode@qm{\the\catcode'\?}%
17   \catcode'\?=12\relax%
18 }
19 \def\pathsuris@resetcatcodes{%
20   \catcode'\#\pathsuris@oldcatcode@hash\relax%
21   \catcode'\/>\pathsuris@oldcatcode@slash\relax%
22   \catcode'\:\pathsuris@oldcatcode@colon\relax%
23   \catcode'\?\pathsuris@oldcatcode@qm\relax%
24 }

```

We define some macros for later comparison.

```

25 \def\@ToTop{..}
26 \def\@Slash{/}
27 \def\@Colon{:}
28 \def\@QuestionMark{?}
29 \def\@ToHere{.}
30
31 \pathsuris@setcatcodes
32 \def\@Fragment{#}
33 \pathsuris@resetcatcodes

```

Implement \@cpath.

\@cpath

```

34 \def\@cpath#1{%
35   \edef\pathsuris@temp{#1}%
36   \def\@CanPath{}%
37   \IfBeginWith\pathsuris@temp\@Slash{%
38     \@cpath@loop%
39     \edef\@CanPath{\@Slash\@CanPath}%
40   }{%
41     \@cpath@loop%
42   }%
43   \IfEndWith\@CanPath\@Slash{%
44     \ifx\@CanPath\@Slash\else%
45       \StrGobbleRight\@CanPath1[\@CanPath]%
46     \fi%
47   }{}%
48 }
49
50 \def\@cpath@loop{%
51   \IfSubStr\pathsuris@temp\@Slash{%
52     \StrCut\pathsuris@temp\@Slash\pathsuris@temp@a\pathsuris@temp%
53     \ifx\pathsuris@temp@a\@ToTop%
54       \ifx\@CanPath\@empty%
55         \edef\@CanPath{\@ToTop}%
56       \else%
57         \edef\@CanPath{\@CanPath\@Slash\@ToTop}%
58       \fi%
59     \@cpath@loop%
60   \else%
61     \IfBeginWith\pathsuris@temp\@ToTop{%
62       \StrBehind{\pathsuris@temp}{\@ToTop}[\pathsuris@temp]%
63       \IfBeginWith\pathsuris@temp\@Slash{%
64         \edef\pathsuris@temp{\@CanPath\pathsuris@temp}%
65       }{%
66         \ifx\@CanPath\@empty\else%
67           \edef\pathsuris@temp{\@CanPath\@Slash\pathsuris@temp}
68         \fi%
69       }%

```

```

70         \def\@CanPath{}%
71         \@cpath@loop%
72     }{%
73         \ifx\@CanPath\@empty%
74             \edef\@CanPath{\pathsuris@temp@a}%
75         \else%
76             \edef\@CanPath{\@CanPath\@Slash\pathsuris@temp@a}%
77         \fi%
78         \@cpath@loop
79     }%
80 \fi%
81 }{
82     \ifx\@CanPath\@empty%
83         \edef\@CanPath{\pathsuris@temp}%
84     \else%
85         \edef\@CanPath{\@CanPath\@Slash\pathsuris@temp}%
86     \fi%
87 }%
88 }

```

Implement `\cpath` to print the canonicalized path.

`\cpath`

```

89 \newcommand\cpath[1]{%
90     \@cpath{#1}%
91     \@CanPath%
92 }

```

## 2.4 URI splitting

`\seturi@`

```

93 \newif\if@pathsuris@done@
94 \def\seturi@[#1]#2{%
95     \@pathsuris@done@false%
96     \def\pathsuris@prefix@temp{#1}
97     \edef\pathsuris@curruri{#2}%
98     \edef\pathsuris@temp{\pathsuris@curruri}%
99     \def\pathsuris@curruri@scheme{}%
100    \def\pathsuris@curruri@authority{}%
101    \def\pathsuris@curruri@path{}%
102    \def\pathsuris@curruri@query{}%
103    \def\pathsuris@curruri@fragment{}%
104    % scheme
105    \IfSubStr{\pathsuris@temp}{\@Colon}{%
106        % TODO check for valid scheme
107        \StrBefore{\pathsuris@temp}{\@Colon}[\pathsuris@curruri@scheme]%
108        \StrBehind{\pathsuris@temp}{\@Colon}[\pathsuris@temp]%
109    }{}%
110    % authority

```

```

111 \IfBeginWith{\pathsuris@temp}{\@Slash\@Slash}{%
112 \StrBehind{\pathsuris@temp}{\@Slash\@Slash}[\pathsuris@temp]%
113 \IfSubStr{\pathsuris@temp}{\@Slash}{%
114 \StrBefore{\pathsuris@temp}{\@Slash}[\pathsuris@curruri@authority]%
115 \StrBehind{\pathsuris@temp}{\@Slash}[\pathsuris@temp]%
116 % TODO userinfo,host,port
117 }{%
118 % TODO query,fragment
119 \edef\pathsuris@curruri@authority{\pathsuris@temp}%
120 \@pathsuris@done@true%
121 }%
122 }{}%
123 % path, query, fragment
124 \if@pathsuris@done@else%
125 \IfSubStr{\pathsuris@temp}{\@QuestionMark}{%
126 % path
127 \StrBefore{\pathsuris@temp}{\@QuestionMark}[\pathsuris@curruri@path]%
128 \StrBehind{\pathsuris@temp}{\@QuestionMark}[\pathsuris@temp]%
129 % query,fragment
130 \IfSubStr{\pathsuris@temp}{\@Fragment}{%
131 \StrBefore{\pathsuris@temp}{\@Fragment}[\pathsuris@curruri@query]%
132 \StrBehind{\pathsuris@temp}{\@Fragment}[\pathsuris@curruri@fragment]%
133 }{%
134 \edef\pathsuris@curruri@query{\pathsuris@temp}%
135 }%
136 }{%
137 % path,fragment
138 \IfSubStr{\pathsuris@temp}{\@Fragment}{%
139 \StrBefore{\pathsuris@temp}{\@Fragment}[\pathsuris@curruri@path]%
140 \StrBehind{\pathsuris@temp}{\@Fragment}[\pathsuris@curruri@fragment]%
141 }{%
142 \edef\pathsuris@curruri@path{\pathsuris@temp}%
143 }%
144 }%
145 \fi%
146 %drop trailing slash of path
147 %\IfEndWith{\pathsuris@curruri@path}{\@Slash}{%
148 % \StrGobbleRight{\pathsuris@curruri@path}{1}[\pathsuris@curruri@path]
149 %}%{}%
150 %
151 %\edef\pathsuris@curruri@path{\cpath{\pathsuris@curruri@path}}%
152 \ifx\pathsuris@prefix@temp\empty\else%
153 \expandafter\edef\csname \pathsuris@prefix@temp scheme\endcsname{\pathsuris@curruri@sch
154 \expandafter\edef\csname \pathsuris@prefix@temp authority\endcsname{\pathsuris@curruri@
155 \expandafter\edef\csname \pathsuris@prefix@temp path\endcsname{\pathsuris@curruri@path}
156 \expandafter\edef\csname \pathsuris@prefix@temp query\endcsname{\pathsuris@curruri@quer
157 \expandafter\edef\csname \pathsuris@prefix@temp fragment\endcsname{\pathsuris@curruri@f
158 \fi%
159 }

```

\seturi

```
160 \newrobustcmd\seturi[1][ ]{%
161   \pathsuris@setcatcodes%
162   \expandafter\pathsuris@resetcatcodes\seturi@[#1]%
163 }
```

auxiliary code:

```
164 \def\@Space{ }
165 \def\trimstring#1{
166   \edef\pathsuris@trim@temp{#1}
167   \IfBeginWith\pathsuris@trim@temp\@Space{
168     \StrGobbleLeft\pathsuris@trim@temp1[#1]
169     \trimstring{#1}
170   }{
171     \IfEndWith\pathsuris@trim@temp\@Space{
172       \StrGobbleRight\pathsuris@trim@temp1[#1]
173       \trimstring{#1}
174     }{
175       \edef#1{\pathsuris@trim@temp}
176     }
177   }
178 }
179
180 % windows paths
181
182 \catcode'\.=0
183 .catcode'\.=12
184 .let.\@BackSlash\
185 .catcode'\.=0
186 \catcode'\.=12
187
188 \newif\if@windowstopath@inpath@
189 \def\windows@to@path#1{
190   \@windowstopath@inpath@false
191   \def\windows@temp{}
192   \edef\windows@path{#1}
193   \ifx\windows@path\@empty\else
194     \expandafter\windows@path@loop\windows@path\windows@path@end
195   \fi
196   \let#1\windows@temp
197 }
198 \def\windows@path@loop#1#2\windows@path@end{
199   \def\windows@temp@b{#2}
200   \ifx\windows@temp@b\@empty
201     \def\windows@continue{}
202   \else
203     \def\windows@continue{\windows@path@loop#2\windows@path@end}
204   \fi
205   \if@windowstopath@inpath@
```



```

206         \ifx#1\@BackSlash
207             \edef\windows@temp{\windows@temp\@Slash}
208         \else
209             \edef\windows@temp{\windows@temp#1}
210         \fi
211     \else
212         \ifx#1:
213             \edef\windows@temp{\@Slash\windows@temp}
214             \@windowstopath@inpath@true
215         \else
216             \edef\windows@temp{\windows@temp#1}
217         \fi
218     \fi
219     \windows@continue
220 }
221
222 \def\path@to@windows#1{
223     \@windowstopath@inpath@false
224     \def\windows@temp{}
225     \edef\windows@path{#1}
226     \edef\windows@path{\expandafter\@gobble\windows@path}
227     \ifx\windows@path@empty\else
228         \expandafter\path@windows@loop\windows@path\windows@path@end
229     \fi
230     \let#1\windows@temp
231 }
232 \def\path@windows@loop#1#2\windows@path@end{
233     \def\windows@temp@b{#2}
234     \ifx\windows@temp@b@empty
235         \def\windows@continue{}
236     \else
237         \def\windows@continue{\path@windows@loop#2\windows@path@end}
238     \fi
239     \if@windowstopath@inpath@
240         \ifx#1/
241             \edef\windows@temp{\windows@temp\@BackSlash}
242         \else
243             \edef\windows@temp{\windows@temp#1}
244         \fi
245     \else
246         \ifx#1/
247             \edef\windows@temp{\windows@temp:\@BackSlash}
248             \@windowstopath@inpath@true
249         \else
250             \edef\windows@temp{\windows@temp#1}
251         \fi
252     \fi
253     \windows@continue
254 }
255

```

256  $\langle /package \rangle$

## Change History

v1.0

General: First Version with  
Documentation ..... 1

v1.1

General: adding `\baseURI` from  
`omdoc.sty` and `\defpath` from  
`modules.sty` ..... 1

## References

- [BFM05] Tim Berners-Lee, Roy T. Fielding, and Larry Masinter. *Uniform Resource Identifier (URI): Generic Syntax*. RFC 3986. Internet Engineering Task Force (IETF), 2005. URL: <http://www.ietf.org/rfc/rfc3986.txt>.