

The beamer-varbox package*

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Abstract

A package providing variable size corners for beamer boxes.

1 Usage

Loading the package provides the `variable rounded` predefined option for the beamer elements `block begin`, `block alerted begin`, `block example begin`, `block end`, `block alerted end`, and `block example end` and sets them as the default for these element.

2 Options

cornerpercent The package has one option, `cornerpercent`, that describes the scale of corner arc relative to the standard rounded predefined option provided by the beamer class. It is a keyword option that takes values between 0 and 1 (inclusive), where 0 indicates sharp corners and 1 the standard corners of the beamer package. It can be called either when including the package as

```
\usepackage [cornerpercent=<value>] {beamer-varbox}
```

or when setting the template manually as, e.g.,

```
\setbeamertemplate {<element name>} [variable rounded] [cornerpercent=<value>]
```

The default value is 0.3.

3 Examples of Use

Some examples of the effects of the `cornerpercent` option are the following. Note that 1 is equivalent to the standard beamer boxes, 0.3 is the default setting for this package, and 0 does not have any rounding at the corners.

*This document corresponds to `beamer-varbox A`, dated 2026/05/12.

cornerpercent=1



cornerpercent=0.6



cornerpercent=0.3



cornerpercent=0



4 Implementation

```
1 % Check that beamer class is loaded
2 %
3 \@ifclassloaded{beamer}{}{%
4   \PackageError{beamer-varbox}{%
5     This package needs the beamer class.\MessageBreak
6     To use this package, load the beamer class.
7   }{%
8     The package could not be loaded, because it needs\MessageBreak
9     beamer class to function.
10  }%
11  \endinput
12 }
13
14
15 % Require xkeyval to do modern package keyval handling
16 \RequirePackage{xkeyval}
17
18 \DeclareOptionX{cornerpercent}[0.3]{\def\beamer@cornerpercentdefault{#1}}
19 \ExecuteOptionsX{cornerpercent=0.3}
20 \ProcessOptionsX\relax
21
22 % Define 0 to compare against
23 \def\bmb@zero{0}
24
25 %
26 % Define used keys
```

```

27 %
28 \define@key{beamerboxes}{scheme}{\def\bmb@upper{@scheme upper #1}%
29 \def\bmb@lower{@scheme lower #1}}
30 \define@key{beamerboxes}{upper}{\def\bmb@upper{#1}}
31 \define@key{beamerboxes}{lower}{\def\bmb@lower{#1}}
32 \define@key{beamerboxes}{width}{\edef\bmb@width{#1}}
33 \define@key{beamerboxes}{shadow}[true]{\csname bmb@shadow#1\endcsname}
34 \define@key{beamerboxes}{cornerpercent}{\def\bmb@cornerpercent{#1}}
35
36 % Define needed variables
37 \newif\ifbmb@shadow
38 \newbox\bmb@box
39 \newbox\bmb@colorbox
40 \newdimen\bmb@boxwidth
41 \newdimen\bmb@boxheight
42 \newdimen\bmb@prevheight
43 \newdimen\bmb@temp
44 \newdimen\bmb@dima
45 \newdimen\bmb@dimb
46 \newdimen\bmb@dimc
47 \newdimen\bmb@prevheight
48 \newdimen\bmb@supportcorner
49 \newdimen\bmb@initstart
50 \newdimen\bmb@advance
51
52 %
53 % The below is adapted from the beamer package
54 % files beamerbaseboxes.sty and beamerbaseauxtemplates.sty.
55 % Authors of those files are:
56 % Till Tantau, Vedran Miletic, Joseph Wright,
57 % Louis Stuart, and samcarter.
58 % Thanks for the work!!
59 %
60 \newcommand\beamerboxesvariablerounded[2][\%
61 \global\let\beamer@firstlineitemizeunskip=\relax%
62 \vbox\bgroup%
63 \setkeys{beamerboxes}{upper=block title,lower=block body,%
64 width=\textwidth,shadow=false,%
65 cornerpercent=\beamer@cornerpercentdefault}%
66 \setkeys{beamerboxes}{#1}%
67 {%
68 \usebeamercolor{\bmb@lower}%
69 \globalcolorstrue%
70 \colorlet{lower.bg}{bg}%
71 }%
72 {%
73 \usebeamercolor{\bmb@upper}%
74 \globalcolorstrue%
75 \colorlet{upper.bg}{bg}%
76 }%
77
78 %
79 % Typeset head
80 %

```

```

81 \vskip4bp
82 \setbox\bmb@box=\hbox{%
83   \begin{minipage}[b]{\bmb@width}%
84     \usebeamercolor[fg]{\bmb@upper}%
85     #2%
86   \end{minipage}}%
87 \ifdim\wd\bmb@box=0pt%
88   \setbox\bmb@box=\hbox{%
89     \ht\bmb@box=1.5pt%
90     \bmb@prevheight=-4.5pt%
91   \else%
92     \wd\bmb@box=\bmb@width%
93     \bmb@temp=\dp\bmb@box%
94     \ifdim\bmb@temp<1.5pt%
95       \bmb@temp=1.5pt%
96     \fi%
97     \setbox\bmb@box=\hbox{\raise\bmb@temp\hbox{\box\bmb@box}}%
98     \dp\bmb@box=0pt%
99     \bmb@prevheight=\ht\bmb@box%
100   \fi%
101   %
102   %
103   %
104   \ifdim\bmb@cornerpercent pt >1pt
105     \PackageError{beamer-varbox}{%
106       The key cornerpercent is above 1.\MessageBreak
107       The key is allowed to take values in between 0 and 1 (inclusive)%
108     }{%
109       cornerpercent is allowed to be between 0 and 1 (inclusive)%
110     }%
111   \fi
112   %
113   % Check if the corners should be sharp
114   %
115   \if\bmb@cornerpercent\bmb@zero
116     \bmb@temp=\bmb@width%
117     \bmb@dima=\bmb@temp\advance\bmb@dima by8bp%
118     \bmb@dimc=-\ht\bmb@box\advance\bmb@dimc by-2pt%
119     \hbox{%
120       \begin{pgfpicture}{0bp}{+-\ht\bmb@box}{0bp}{+-\ht\bmb@box}
121         \ifdim\wd\bmb@box=0pt%
122           \color{lower.bg}%
123           \pgfsetfillopacity{0}
124         \else%
125           \color{upper.bg}%
126         \fi%
127         \pgfpathmoveto{-4bp}{\bmb@dimc}%
128         \pgfpathqlineto{-4bp}{3bp}%
129         \pgfpathqlineto{\bmb@dima}{3bp}%
130         \pgfpathqlineto{\bmb@dima}{\bmb@dimc}%
131         \pgfsetlinewidth{1.5pt}
132         \pgfusepath{fill,stroke}
133       \end{pgfpicture}%
134     \copy\bmb@box%

```

```

135 }%
136 \else
137 %
138 % Calculate dimensions for adjusted corner
139 %
140 \bmb@supportcorner=\dimexpr\bmb@cornerpercent\dimexpr1.8bp\relax\relax%
141 \bmb@initstart=\dimexpr 4bp-\bmb@cornerpercent\dimexpr4bp\relax\relax%
142 \bmb@advance=\dimexpr \bmb@initstart+\bmb@cornerpercent\dimexpr2.2bp\relax\relax%
143 % Calculate aux sizes
144 \bmb@temp=\bmb@width%
145 \bmb@dima=\bmb@temp\advance\bmb@dima by\bmb@advance%
146 \bmb@dimb=\bmb@temp\advance\bmb@dimb by4bp%
147 \bmb@dimc=-\ht\bmb@box\advance\bmb@dimc by-2pt%
148 \hbox{%
149   \begin{pgfpicture}{0bp}{+-\ht\bmb@box}{0bp}{+-\ht\bmb@box}
150     \ifdim\wd\bmb@box=0pt%
151       \color{lower.bg}%
152       \pgfsetfillopacity{0}
153     \else%
154       \color{upper.bg}%
155     \fi%
156     \pgfpathmoveto{-4bp}{\bmb@dimc}
157     \pgfpathlineto{\pgfpoint{-4bp}{-1bp+\bmb@initstart}}
158     \pgfpathcurveto% Upper left corner
159     {\pgfpoint{-4bp}{3bp-\bmb@supportcorner}}%
160     {\pgfpoint{-4bp+\bmb@supportcorner}{3bp}}%
161     {\pgfpoint{-\bmb@initstart}{3bp}}%
162     \pgfpathlineto{\pgfpoint{\bmb@temp+\bmb@initstart}{3bp}}
163     \pgfpathcurveto% Upper right corner
164     {\pgfpoint{\bmb@dima}{3bp}}%
165     {\pgfpoint{\bmb@dimb}{3bp-\bmb@supportcorner}}%
166     {\pgfpoint{\bmb@dimb}{-1bp+\bmb@initstart}}%
167     \pgfpathqlineto{\bmb@dimb}{-1bp}%
168     \pgfpathlineto{\pgfpoint{\bmb@dimb}{\bmb@dimc}}
169     \pgfsetlinewidth{1.5pt}
170     \pgfusepath{fill,stroke}
171   \end{pgfpicture}%
172   \copy\bmb@box%
173 }%
174 \fi % of sharp corner check
175 \nointerlineskip%
176 \vskip-1pt%
177 \ifdim\wd\bmb@box=0pt%
178 \else%
179   \vskip3pt%
180 \fi%
181 \setbox\bmb@colorbox=\hbox{{\pgfpicturetrue\pgfsetcolor{lower.bg}}}%
182 \setbox\bmb@box=\hbox\bgroup\begin{minipage}[b]{\bmb@width}%
183   \vskip2pt%
184   \usebeamercolor[fg]{\bmb@lower}%
185   \colorlet{beamerstructure}{upper.bg}%
186   \colorlet{structure}{upper.bg}%
187 }
188

```

```

189
190
191 \def\endbeamerboxesvariablerounded{%
192   \end{minipage}\egroup%
193   \bmb@temp=\dp\bmb@box%
194   \advance\bmb@temp by.5pt%
195   \setbox\bmb@box=\hbox{\raise\bmb@temp\hbox{\box\bmb@box}}%
196   \dp\bmb@box=0pt%
197   \bmb@boxwidth=\bmb@width%
198   \bmb@boxheight=\ht\bmb@box%
199   \advance\bmb@boxheight by4bp%
200   \advance\bmb@boxheight by\bmb@prevheight%
201   \ifbmb@shadow%
202     \xdef\beamer@storecolorhook{\beamer@colorhook}
203     \xdef\beamer@colorhook{}
204     \pgfdeclareradialshading{bmb@shadowball}{\pgfpointorigin}
205     {%
206       color(0bp)=(pgftransparent!50);
207       color(4bp)=(pgftransparent!100)
208     }%
209     \pgfdeclareradialshading{bmb@shadowballlarge}{\pgfpointorigin}
210     {%
211       color(0bp)=(pgftransparent!0);
212       color(8bp)=(pgftransparent!100)
213     }%
214     \pgfdeclarehorizontalshading{bmb@shadowhorz\the\bmb@boxheight}{\bmb@boxheight-5.5bp}
215     {%
216       color(0bp)=(pgftransparent!0);
217       color(8bp)=(pgftransparent!100)
218     }%
219     \pgfdeclareverticalshading{bmb@shadowvert\the\bmb@boxwidth}{\bmb@boxwidth-4bp}
220     {%
221       color(0bp)=(pgftransparent!100);
222       color(8bp)=(pgftransparent!0)
223     }%
224     \begingroup%
225     \selectcolormodel{gray}
226     \pgfdeclarefading{bmb@shadowmask\the\bmb@boxwidth\the\bmb@boxheight}
227     {%
228       \begin{pgfpicture}
229         \pgftext[at=\pgfpoint{4bp}{4bp}]{\pgfuses shading{bmb@shadowball}}%
230         % bottom left shadow
231         \ifdim\bmb@boxheight>9.5bp%
232           \pgftext[at=\pgfpoint{\bmb@boxwidth}{8bp}]%
233           {\pgfuses shading{bmb@shadowballlarge}}% bottom right shadow
234           \pgftext[at=\pgfpoint{\bmb@boxwidth+4bp}{\bmb@boxheight+2bp}]%
235           {\pgfuses shading{bmb@shadowball}}% top right shadow
236           \pgftext[base, at=\pgfpoint{\bmb@boxwidth+4bp}{7.5bp}]%
237           {\pgfuses shading{bmb@shadowhorz\the\bmb@boxheight}}% right edge shadow
238         \else%
239           \pgftext[at=\pgfpoint{\bmb@boxwidth}{4bp}]%
240           {\pgfuses shading{bmb@shadowball}}% right shadow
241         \fi%
242         \pgftext[left, at=\pgfpoint{4bp}{4bp}]%

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```

243         {\pgfuseshading{bmb@shadowvert\the\bmb@boxwidth}}}% bottom edge
244     %
245     % clipping is needed because shadow is typeset on top of box
246     \begin{pgfscope}
247         \pgfsetcolor{beamer@safeblack}
248         \pgfpathrectangle{\pgfpoint{4bp}{8.1bp}}%
249         {\pgfpoint{\bmb@boxwidth}{\bmb@boxheight-2bp}}
250         \pgfusepath{fill}
251     \end{pgfscope}
252     \end{pgfpicture}%
253     \hskip4bp%
254 }%
255 \endgroup%
256
257 \fi%
258 %
259 % Check if the corners should be sharp
260 %
261 \if\bmb@cornerpercent\bmb@zero
262 \bmb@temp=\bmb@width%
263 \bmb@dima=\bmb@temp\advance\bmb@dima by8bp%
264 \bmb@dimc=\ht\bmb@box
265 \hbox{%
266     \begin{pgfpicture}{0bp}{0bp}{0bp}{0bp}
267         \ifbmb@shadow%
268             \begin{pgfscope}
269                 \pgfpathrectangle{\pgfpoint{0bp}{-7bp}}
270                 {\pgfpoint{\bmb@boxwidth+8bp}{\bmb@boxheight+6bp}}
271                 \pgfsetfading{bmb@shadowmask\the\bmb@boxwidth\the\bmb@boxheight}{%
272                 \pgftransformshift{\pgfpoint{0.5\bmb@boxwidth+6bp}{0.5\bmb@boxheight-4bp}}}%
273                 \pgfusepath{fill}
274             \end{pgfscope}
275         \fi%
276         \unhbox\bmb@colorbox%
277         \pgfpathmoveto{-4bp}{\bmb@dimc}%
278         \pgfpathqlineto{-4bp}{-3bp}%
279         \pgfpathqlineto{\bmb@dima}{-3bp}%
280         \pgfpathqlineto{\bmb@dima}{\bmb@dimc}%
281         \pgfsetlinewidth{1.5pt}
282         \pgfusepath{stroke}
283     \end{pgfpicture}%
284     \box\bmb@box%
285 }%
286 \else
287 \bmb@temp=\bmb@width%
288 \bmb@dima=\bmb@temp\advance\bmb@dima by\bmb@advance%
289 \bmb@dimb=\bmb@temp\advance\bmb@dimb by4bp%
290 \hbox{%
291     \begin{pgfpicture}{0bp}{0bp}{0bp}{0bp}
292         \ifbmb@shadow%
293             \begin{pgfscope}
294                 \pgfpathrectangle{\pgfpoint{0bp}{-7bp}}
295                 {\pgfpoint{\bmb@boxwidth+8bp}{\bmb@boxheight+6bp}}
296                 \pgfsetfading{bmb@shadowmask\the\bmb@boxwidth\the\bmb@boxheight}{%

```

```

297         \pgftransformshift{\pgfpoint{0.5\bmb@boxwidth+6bp}{0.5\bmb@boxheight-4bp}}
298         \pgfusepath{fill}
299     \end{pgfscope}
300     \fi%
301     \unhbox\bmb@colorbox%
302     \bmb@dimc=\ht\bmb@box
303     \pgfpathmoveto{-4bp}{\bmb@dimc}
304     \pgfpathlineto{\pgfpoint{-4bp}{1bp-\bmb@initstart}}
305     \pgfpathcurveto% Lower left corner
306     {\pgfpoint{-4bp}{-3bp+\bmb@supportcorner}}%
307     {\pgfpoint{-4bp+\bmb@supportcorner}{-3bp}}%
308     {\pgfpoint{-\bmb@initstart}{-3bp}}%
309     \pgfpathlineto{\pgfpoint{\bmb@temp+\bmb@initstart}{-3bp}}
310     \pgfpathcurveto% Lower right corner
311     {\pgfpoint{\bmb@dimc}{-3bp}}%
312     {\pgfpoint{\bmb@dimb}{-3bp+\bmb@supportcorner}}%
313     {\pgfpoint{\bmb@dimb}{1bp-\bmb@initstart}}%
314     \pgfpathqlineto{\bmb@dimb}{-1bp}%
315     \pgfpathlineto{\pgfpoint{\bmb@dimb}{\bmb@dimc}}
316     \pgfsetlinewidth{1.5pt}
317     \pgfusepath{stroke}
318     \end{pgfpicture}%
319     \box\bmb@box%
320 }%
321 \fi% of corner check
322 \ifbmb@shadow%
323     \vskip4bp minus 2bp%
324 \else%
325     \vskip2bp%
326 \fi%
327 \egroup% of \vbox\bgroup
328 \ifbmb@shadow%
329     \xdef\beamer@colorhook{\beamer@storecolorhook}
330 \fi
331 }
332
333
334 \defbeamertemplate*{block begin}{variable rounded}[1][shadow=false]%
335 {%
336     \par\vskip\medskipamount%
337     \begin{beamerboxesvariablerounded}[upper=block title,lower=block body,#1]%
338         {\raggedright\usebeamerfont*{block title}\insertblocktitle}%
339         \raggedright%
340         \usebeamerfont{block body}%
341     }%
342
343 \defbeamertemplate*{block end}{variable rounded}%
344 {%
345     \end{beamerboxesvariablerounded}\vskip\smallskipamount
346 }%
347
348 \defbeamertemplate*{block alerted begin}{variable rounded}[1][shadow=false]
349 {%
350     \par\vskip\medskipamount%

```



```

351 \begin{beamerboxesvariablerounded}[upper=block title alerted,lower=block body alerted,#1]%
352   {\raggedright\usebeamerfont*{block title alerted}\insertblocktitle}%
353   \raggedright%
354   \usebeamerfont{block body alerted}%
355 }%
356 \defbeamertemplate*{block alerted end}{variable rounded}[1][]
357 {
358   \end{beamerboxesvariablerounded}\vskip\smallskipamount
359 }
360
361 \defbeamertemplate*{block example begin}{variable rounded}[1][shadow=false]
362 {%
363   \par\vskip\medskipamount%
364   \begin{beamerboxesvariablerounded}[upper=block title example,lower=block body example,#1]
365     {\raggedright\usebeamerfont*{block title example}\insertblocktitle}%
366     \raggedright%
367     \usebeamerfont{block body example}%
368   }%
369 \defbeamertemplate*{block example end}{variable rounded}[1][]
370 {\end{beamerboxesvariablerounded}\vskip\smallskipamount}

```