

**NAME**

`pmbblur` - generate views for camera motion blurring

**SYNOPSIS**

**`pmbblur speed nsamp v0file v1file`**

**DESCRIPTION**

*Pmbblur* takes two viewfiles and generates *nsamp* views starting from *v0file* and moving towards *v1file*. When rendered and averaged together, these views will result in a picture with motion blur due to a camera changing from *v0* to *v1* in a relative time unit of 1, whose shutter is open starting at *v0* for *speed* of these time units. Either *pinterp(1)* or *rpict(1)* may be called to do the actual work. (The given *v0file* must also be passed on the command line to the chosen renderer, since *pmbblur* provides supplemental view specifications only.)

For *pinterp*, feed the output of *pmbblur* to the standard input of *pinterp* and apply the *-B* option to blur views together. In most cases, two pictures with z-buffers at *v0* and *v1* will get a satisfactory result, though the perfectionist may wish to apply the *-ff* option together with the *-fr* option of *pinterp*.

To use *pmbblur* with *rpict*, apply the *-S* option to indicate a rendering sequence, and set the *-o* option with a formatted file name to save multiple output pictures. When all the renderings are finished, combine them with the *pcomb(1)* program, using appropriate scalefactors to achieve an average. Note that using *rpict* is MUCH more expensive than using *pinterp*, and it is only recommended if the scene and application absolutely demand it (e.g. there is prominent refraction that must be modeled accurately).

For both *pinterp* and *rpict*, the computation time will be proportional to the number of views from *pmbblur*. We have found a *nsamp* setting somewhere between 5 and 10 to be adequate for most images. Relatively larger values are appropriate for faster camera motion.

The *-pm* option of *rpict* may be used instead to blur animated frames, with the added advantage of blurring reflections and refractions according to their proper motion. However, this option will result in more noise and expense than using *pmbblur* with *pinterp* as a post-process. If both blurring methods are used, a small value should be given to the *-pm* option, on the order of 0.1 or 0.2. This will be just enough to blur the boundaries of the ghosts which may appear using *pmbblur* with a small number of time samples.

**EXAMPLES**

To use *pinterp* to simulate motion blur between two frames of a walk-through animation, where the camera shutter is open for 1/4 of the interframe distance:

```
pmbblur .25 8 fr1023.pic fr1024.pic | pinterp -B -vf fr1023.pic -x 640 -y 480 fr1023.pic fr1023.zbf
fr1024.pic fr1024.zbf > fr1023b.pic
```

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**BUGS**

Changes in the view shift and lift vectors or the fore and aft clipping planes are not blurred.

**SEE ALSO**

`pcomb(1)`, `pdfblur(1)`, `pinterp(1)`, `rcalc(1)`, `rpict(1)`, `vwright(1)`