NAME
pmblur - generate views for camera motion blurring

SYNOPSIS
pmblur speed nsamp v0file v1file

DESCRIPTION
Pmblur 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 pmblur provides supplemental view specifications only.)

For pinterp, feed the output of pmblur 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 pmblur 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 pmblur. 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 or in combination 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 pmblur with pinterp as a post-process. If both blurring methods are used, a smaller value should be given to the rpict −pm option equal to the shutter speed divided by the number of pmblur views. This will be just enough to blur the boundaries of the ghosts which may appear using pmblur 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:

    pmblur .25 8 fr1023.hdr fr1024.hdr | pinterp −B −vf fr1023.hdr −x 640 −y 480 fr1023.hdr fr1023.zbf
    fr1024.hdr fr1024.zbf > fr1023b.hdr

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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), pmblur2(1), pmdblur(1), rcalc(1), rpict(1), vwright(1)