Ensuring that the Correct Images are Employed in Wobble2

John Davis, 8 December, 2006

1 Preamble

It is possible to align incorrect images in the boxes in the wobble2 display with the result that the servos will act strangely and may even drive the images away when closed. This is well known but, at least for me, the origin of the incorrect images was unknown and I did not have a systematic method for acquiring the correct images. Gordon Robertson realised what the cause of the problem was and together we established a procedure for ensuring that we had the right images and a technique for finding them if we had the wrong ones. Some of this is known but our experience suggested it was worth documenting.

2 The Unwanted Images

The unwanted images are spaced the width or depth of the wide-field display apart. There is a series of positions separated by a multiple of the height or width of the wide field display where the images can be aligned (at least visually) in the appropriate boxes. However, the incorrect images will be read out later than would be the case for the correct image by the same multiple of the sampling time. The resulting delay in readout results in the malfunctioning of the servo. There are some 8 images in the vertical direction and 15 in the horizontal direction that can be seen by simply scanning the images across the wide field screen with the beam-splitter.

3 Establishing whether the correct images have been aligned

The accepted method of establishing whether the correct images are aligned with the boxes is by changing the binning from the default 1x1 to 2x2, 4x4 and 8x8. It has been found that just binning by 2x2 and 4x4 is not enough - binning by these factors may appear perfectly alright but then binning by 8x8 may reveal an image or images that do not bin properly! Therefore, always use each binning step up to and including 8x8. If ALL the binning steps, including 8x8, show the correct displacement of the images then it is believed that you have the right images.

4 Selecting the correct images

If an image is found not to bin correctly drive it to the correct binned position while still in the binned state. Then check all binning steps and repeat until all binning steps behave as they should.