

## AbstractID: 1799 Title: New Collimator Rotation Quality Assurance Test for Field Light and Mylar Crosshair

We have developed a simple method to test the agreement of the collimator axis of rotation and the positioning of the field light source and the Mylar crosshair of a linear accelerator. Typical methods to determine the positioning of the field light source rely on observing the movement the shadow cast by an external pointer as the collimator is rotated. The crosshair is then checked by observing the deviation of its shadow as the collimator is rotated. These projected shadows are blurred out and small shifts can be difficult to detect. Our method isolates these individual components and visualizes the deviations directly and independently of each other. A convex lens magnifies and focuses the image of either the field light source or the crosshair onto a screen. When the collimator is rotated the image on the screen will rotate as well. If the field light source or crosshair is centered on the axis of rotation of the collimator then the diameter of its rotation on the screen will be zero. This method was tested by using a digital camera to capture images of the field light and crosshair in different positions as the collimator was rotated. A Varian CL-6/100 accelerator was tested by acquiring images at collimator angles 30 degrees apart. The diameter of the deviation of the field light was found to be 0.34mm and for the crosshair 0.26mm. These independent tests could be most useful when commissioning new installations, repaired equipment or part of annual QA tests.