

CPM1

Position of LEDs

9/13/2022

Nathan Sayer

IR LEDs in front vs. behind diffuser (20ms exposure time)



Front



Behind

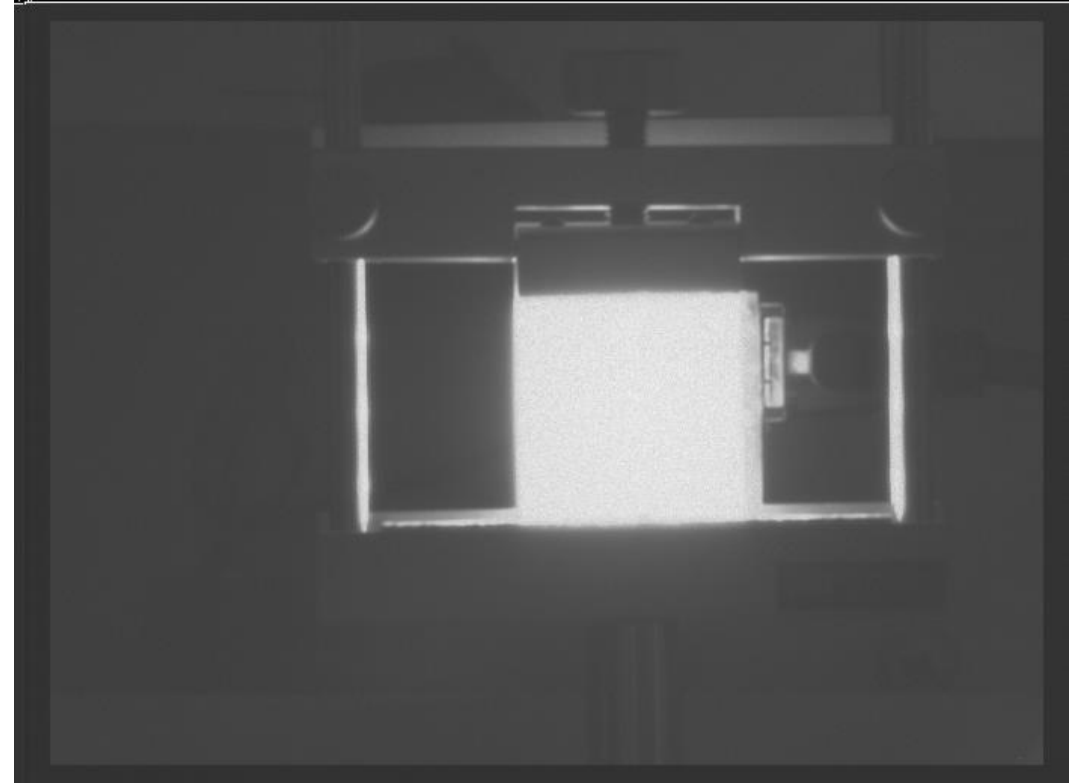
Reflections



How does the position of the opal glass diffuser affect the position of the object?



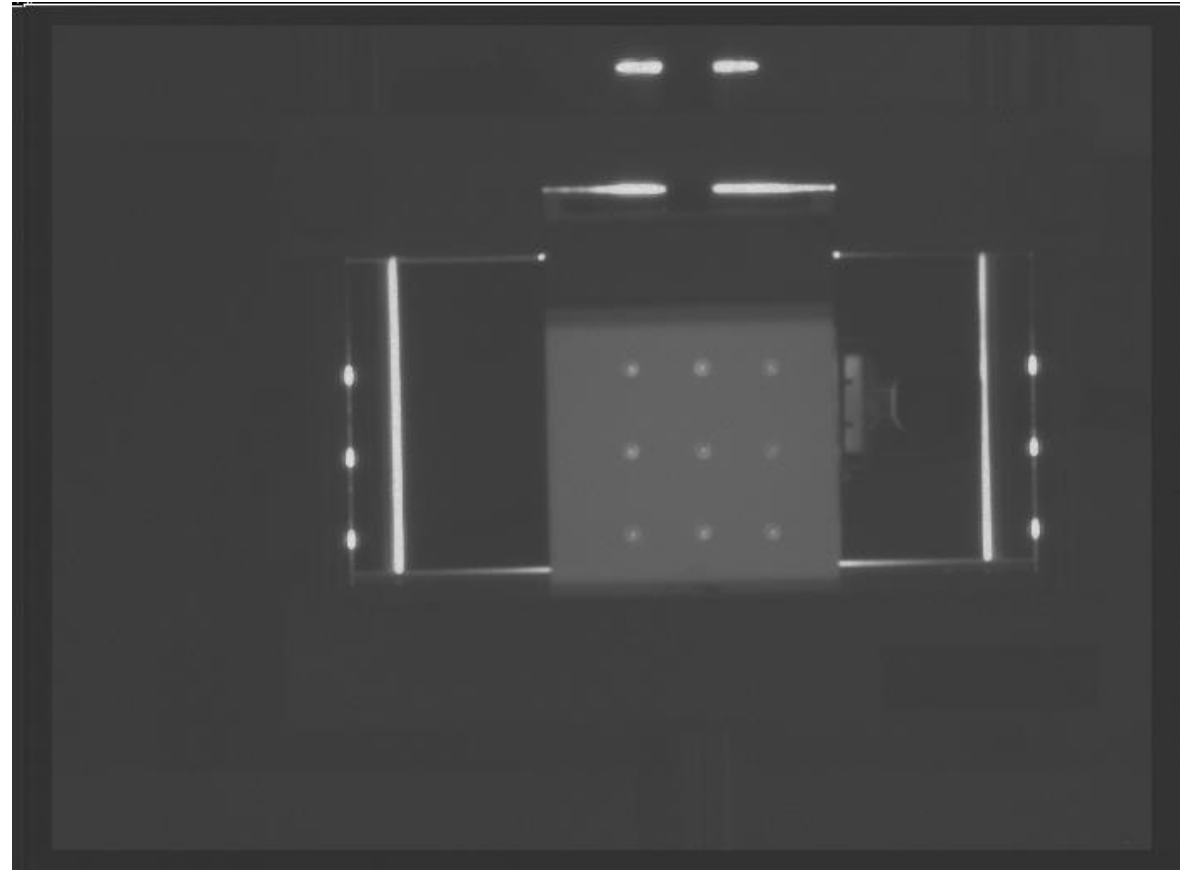
Diffuser 25mm from LEDs, 10 ms exposure time



Diffuser 25mm from LEDs, 1000 ms exposure time



Diffuser 220mm from LEDs, 10ms exposure time

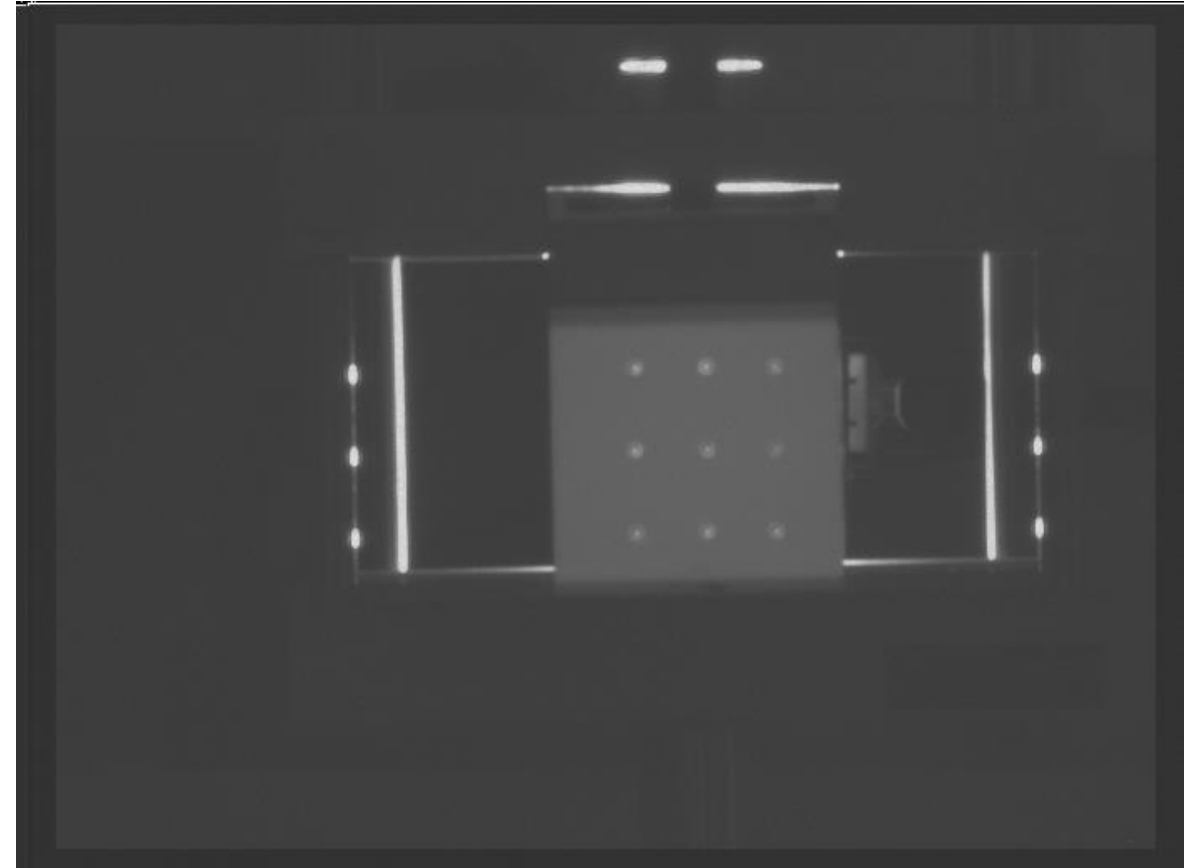


Diffuser 220mm from LEDs, 1000ms exposure time

Cardstock Diffuser, For Comparison



Cardstock

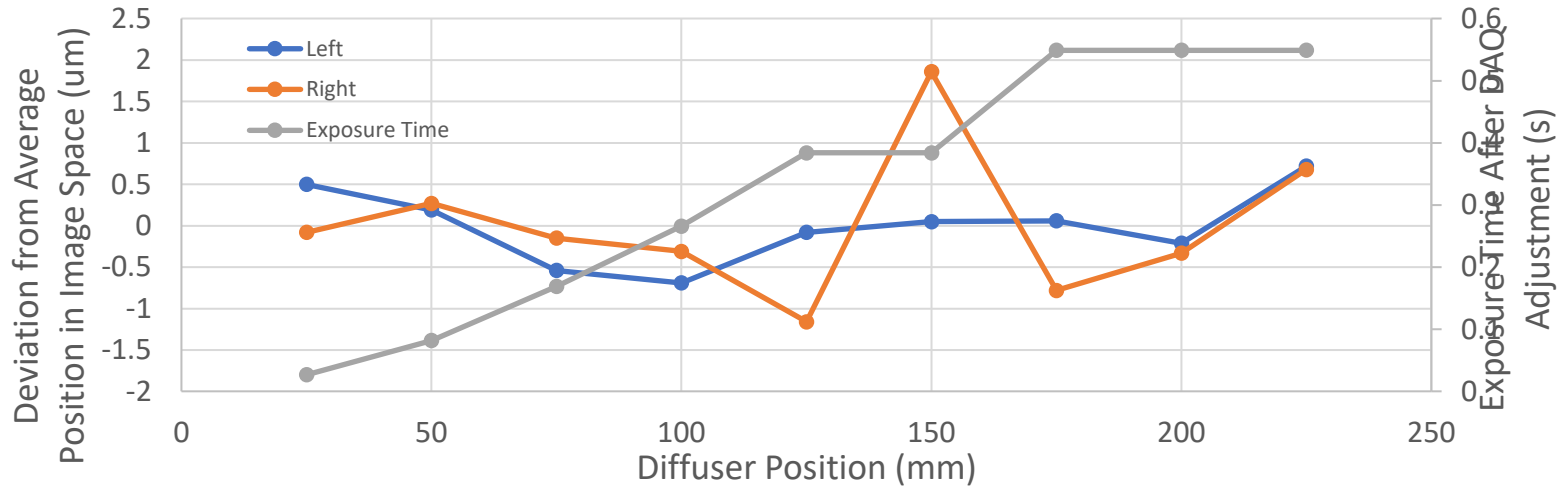


Opal Glass

Diffuser positioned 220mm from LEDs, 1000ms exposure time

Using DAQ_Adjust_Flash

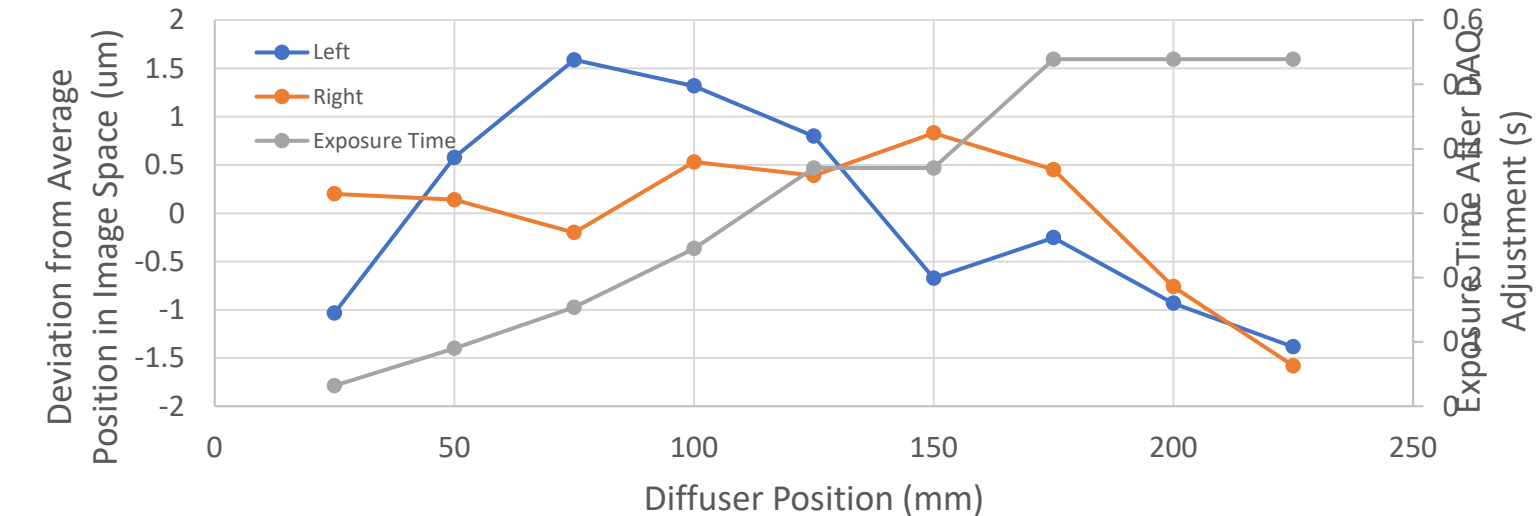
Deviation and Exposure Time vs. Position of Diffuser



Trial 1

Having daq_adjust_flash on, we move the diffuser by 25mm increments and capture the post's position each time. We find the average of the post's position and calculate the deviation from the average at each point.

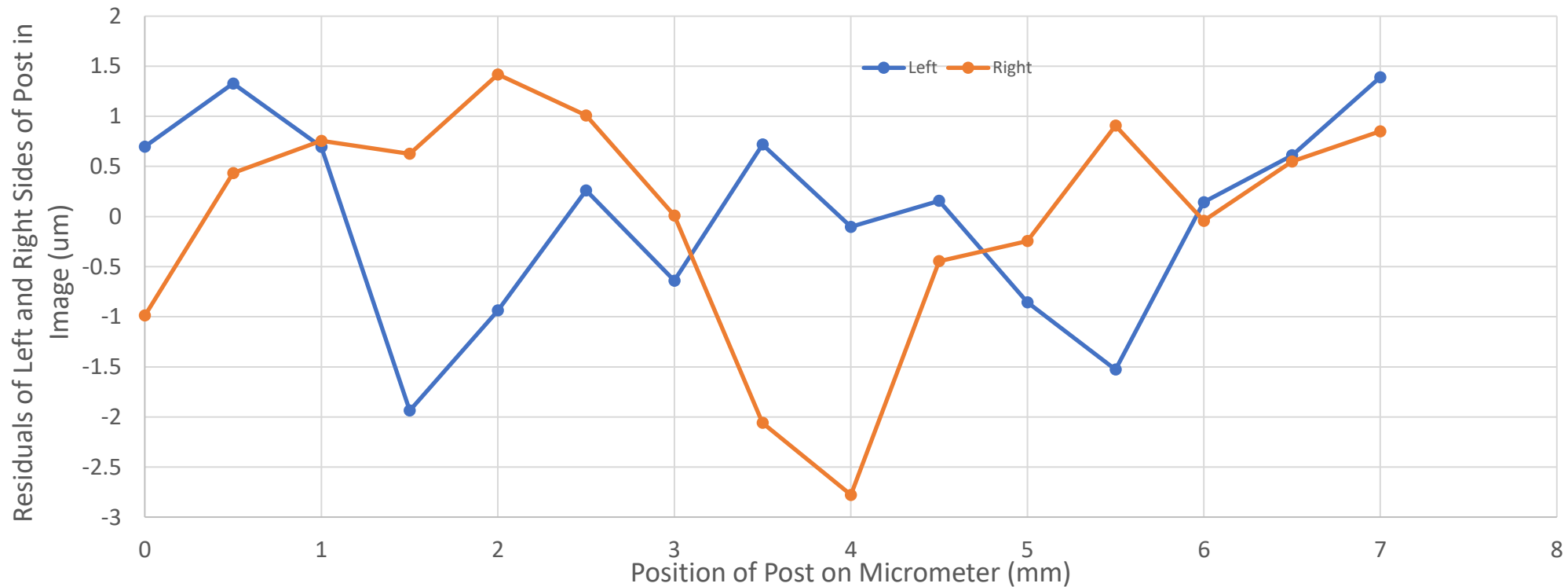
Deviation and Exposure Time vs. Position of Diffuser



Trial 2

Residuals From Straight Line (Opal Glass)

Residuals From Straight Line of Left and Right Position of Optical Post vs. Position of Post on Micrometer



We move an optical post by 500um increments and measure the left and right edge position in image space. Diffuser is 25mm in front of LEDs.