

Beam profile plot

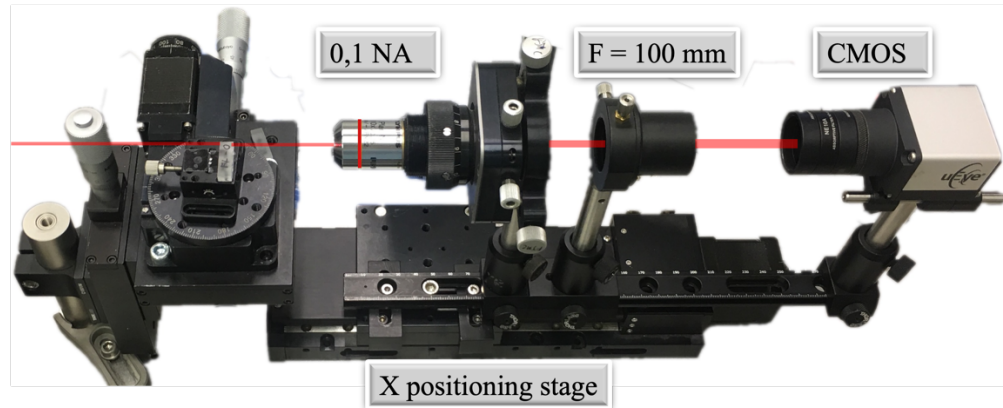


Fig 1. Beam profile measurement stand.

In Fig 1. HeNe beam goes through the fused silica sample with the written optical element inside its volume. On the motorized positioning stage there is 0.1 NA objective lens and 100 mm spherical lens, which together magnifies the view by 2.22 times. The camera is needed to capture the beam intensity distribution at some certain position. The stage is used find the focus where the element is and to capture images at different distances from the sample.

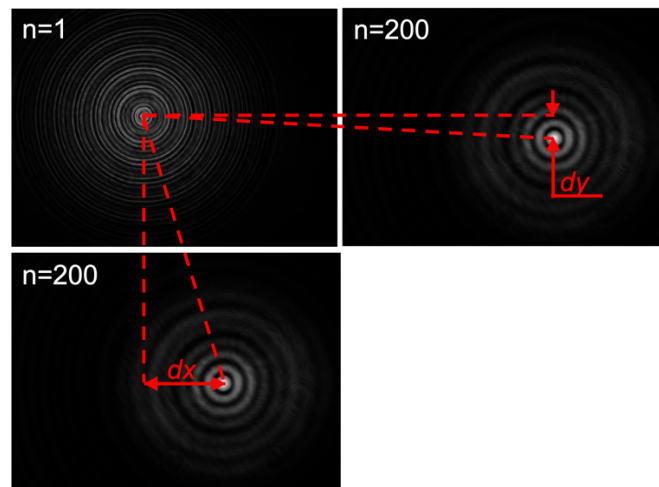


Fig 2. Setting of the first and the last picture center points with MATLAB.

Then captured images are analyzed with MATLAB. The method includes intensity determination and stacking intensity profiles to draw xz beam profile plot. The intensity is found by choosing the center point of the image which refers to the center of the laser beam and element and taking intensity profile from x axis. While capturing the pictures it is very hard to place X positioning stage exactly parallel to the laser beam, which results in center point shift in x and y direction while capturing the images at different positions. In this case center points are set by hand with MATLAB and shifts are calculated by comparing the first and the last images (Fig 2.).