

Bachelor thesis review

Kaung Htet Zaw

Shaping of a laser beam

The goal of the thesis was to design and test an optical system that would create a rectangular, evenly illuminated laser beam spot, with the possibility to control the size of one side of the spot. The assignment was not very challenging for a bachelor student, just slightly extending the topics covered in the optics courses taken by the student.

In the theoretical part, the author explains the principle of a laser and gives a review of laser beam shapers and homogenizers. Then he explains the thin lens image forming, thin lens combinations and the purposes of stops. Cylinder lenses and lenslets are mentioned too. The practical part describes the optical system design, mechanical design and measurements made.

The work included optical calculations, mechanical design and measurements. I lacked more independence and use of knowledge learnt during the study – a steady guidance from my side was needed. The purpose of the experiments, their principles and data processing had to be discussed repeatedly. The student mainly followed my suggestions regarding the optical calculations, instead of coming with this own ideas. So was it with the mechanical design. Still, the system worked, including the zoom feature.

The thesis' text is logically organised, the principles and authors' work are well described. Several ray diagrams are included to support author's calculations. Nevertheless, I miss the explanation why the exit pupil is at the back focal plane of the f-theta lens, which is a crucial characteristic of the system.

However, I appreciate that the device was finally made and proved working.

I recommend the work for defence and grade it

D, satisfactory

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Ing. Bc. Šárka Němcová, Ph.D.