

The main goal of this master thesis is, at first, to describe upcoming upgrade of ATLAS experiment in CERN in Switzerland and to describe the principle of strip silicon detectors. Then it is measurement and analysis of data from laser tests with two lasers: red and infra-red. Last but not least goal is to document the method of measurement and analysis of laser tests for the future laser tests. The text of the thesis is divided into five chapters. The first chapter is dedicated to the research facility CERN, its present experiment ATLAS and future experiment ATLAS Upgrade. The second chapter explains properties of semiconductors and the principle of strip semiconductor detectors. The third chapter describes whole measurement layout: a lab for testing, equipment needed for the tests and the whole system functioning. In the fourth chapter there are actual results from the laser tests. The tests were done on two end-cap prototype modules for ATLAS Upgrade with strip silicon sensors using two lasers: red and infra-red. The last chapter briefly explains the functions of macros that were created for measuring and analysing data from laser tests.