

Together with the planned upgrade of the Large Hadron Collider at CERN, a lot of experiments on the LHC will have to be improved as well. This is also the case of the ATLAS experiment. This thesis focuses on laser testing of silicon strip detectors which will be part of the Inner Tracker in the improved ATLAS Upgrade experiment. The first two parts of the thesis describe the ATLAS Upgrade experiment and summarise the basic theory behind silicon strip detectors. The third and the main part of the thesis is dedicated to experimental part of my work, which consisted of the actual laser testing of silicon strip detectors. The fourth chapter discusses the results of my measurements. All the tests presented in this thesis were performed in the laboratory of the Institute of Particle and Nuclear Physics in Prague. Besides having performed the measurements of detection properties of strip detectors, several ROOT macros for automatization of these measurements were written.