

## **Electrical impedance tomography of soft tissue**

This bachelor thesis presents an overview of electrical impedance tomography (EIT) as a proposed imaging technique with special focus on its applications in medicine. Amongst all of the areas being considered, the possibility of performing breast cancer examinations is given special focus. The author discusses the motivation and rationale behind using EIT for this particular purpose and has gathered information about EIT systems which have been constructed to date. The reconstruction of a conductivity distribution within a physical body is a complex problem which necessitates the solution of a number of subproblems - starting with the calculation of these potential distribution within the body ending with the solution of an inverse boundary value problem. The thesis describes some aspects of these subproblems and presents their mathematical treatment. It concludes by testing the EIDORS software package which represents a reference implementation of algorithms for the EIT problem.