

## **Abstract**

Magnetic resonance imaging is a modern radiological imaging method. It allows to diagnose pathological changes in the human body without any need to disrupt of its structure. The main advantage of NMR is that it does not use any harmful ionizing radiation. Because NMR is a relatively young technology, any harmful effects have not found yet on the human organism. But from the physical point of view the potential risks arise consequence of biological structures interaction and tissues with the static magnetic field, gradient magnetic field and high frequency electromagnetic field. Due to the development methods it leads to intensification of these fields inside the device.

Master's thesis involved research of biophysical effects and potential risks of static magnetic field, gradient magnetic field and high frequency electromagnetic field used in magnetic resonance. Result interactions of these fields with investigated patients' bodies biological structures leads to heat induction inside their bodies. Temperature of the investigated parts of patient body is monitored. Ascertained data are evaluated by the Wilcoxon non-parametric test with simulation Monte Carlo.