# Diploma thesis abstract

Fiber-optic magnetic field sensing by means of diamond micro- and nanoparticles with nitrogen-vacancy centers

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The sensitivity of optically detected magnetic resonance (ODMR) spectra of nitrogen-vacancy (NV) centers in diamond to external magnetic fields enables a new approach to precision magnetic field measurements with unique combination of magnetic sensitivity and spatial resolution at room temperature.

In this work a method for measuring gradients of magnetic field components was developed by integrating NV-diamond with a two-fiber opto-microwave interface, which couples NV centers to microwave and optical fields. Measurements of magnetic field created by magnetized needle were performed using this fiber-probe with theoretical limit of magnetic field sensitivity $60\ pT/\sqrt{Hz}$. The estimated sensitivity of developed method for gradients of magnetic field components was $10^{-7}\ nT/nm\sqrt{Hz}$.