

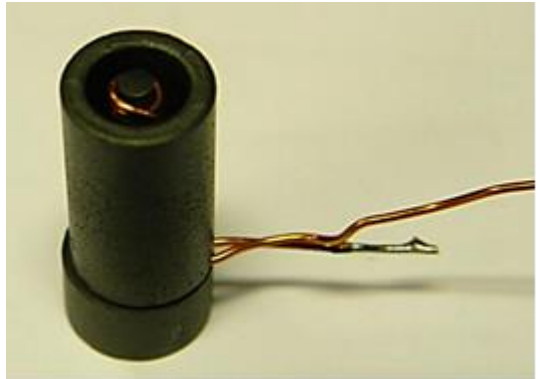
Generation of High-frequency Magnetic Clocking Fields for Nanomagnetic Logic

Abstract

The present thesis focuses on the contrivance of a system suited for the generation of high-frequency magnetic excitation fields for the switching of CoPt (Cobalt Platinum) multilayer films.

To this end, magnetic ferrite-core coils were designed, built and tested and a high-frequency, high-current pulse driving system supplying the coils was developed.

A spate of experiments was carried out, in order to confirm the compliance with the switching requirements. In an alternative approach, planar air coils were analysed, culminating in the successful switching test of a CoPt thin-film at a frequency of 200kHz (5 μ s pulse!).



Number One Result

Generation of excitation B-field pulses with a magnitude in excess of 40mT at a distance of 500 μ m from the coil-structure, at a frequency of 200kHz (sinusoidal pulse-train).

Supervisors:

Dr.-Ing. Markus Becherer

Prof. Dr. rer. nat. Doris Schmitt-Landsiedel