

Physics and application of the giant magnetoimpedance effect

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ABSTRACT: The giant magnetoimpedance (GMI) effect refers to the strong and sensitive variation of the electrical impedance of a magnetic conductor in response to an external magnetic field. While GMI sensing elements exhibit far greater sensitivity to the magnetic field than any giant magnetoresistive sensors, they are still not widely exploited for high sensitivity magnetometers. In this presentation, I will review the physics of the GMI effect and discuss some of the challenges currently preventing its application. In particular, I will present the general approach to modelling the phenomenon and discuss some of the widespread “myths” or misconceptions, which, I believe, have slowed down the development of this promising field. I will also try to place the GMI magnetometers into the context of high sensitivity magnetometry and highlight the problems that need to be address for their widespread application.

ALL ARE WELCOME!!!