

Summary

on the research practice of the student of the second year of master's degree,

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On the topic: **"The formation of spintronics in science"**

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Actuality: Spintronics is a promising branch of physics, where the study of the methods of manipulation and spin wave manipulation is especially important. The variety of observed phenomena associated with spin waves, as well as a wide range of technical applications, makes them a promising subject of research. It is possible to use spin waves to excite, store, and receive electrical signals and perform logical operations in nanoscale devices, including microwave filters and logic gates. This question is devoted to this work.

Problem statement: the main task of the spintronics is the transformation of information in the form of magnetization into electrical voltage and the inverse problem - control of the spin with the help of an electric field.

Ways of solving the problem: managed to turn the spin around the axis (like a whip) at a speed of several billions of revolutions per second. This high speed can turn into a prose ultrasonic wave frequency generator of small size, suitable for mobile phones that use just this frequency range.

Results and conclusions: The results of recent studies in the field of spintronics are presented. The modern approaches to the development, creation and research of micro and nanoelectronic devices based on magnetic materials are considered and analyzed.