Analytical Computation Software Module in Python for Automating the Representation of Equations for Further Numerical Modeling of the Chain of Nanomagnets Associated with the Josephson Junction

Majed Nashaat AbdelGhani[1,2], Kirill V. Kulikov[1], Andrey V. Nechaevskiy[3,4], Adiba R. Rahmonova[3,4], Oksana I. Streltsova[3,4], and Maxim I. Zuev[4]

[1] *Bogolyubov Laboratory of Theoretical Physics, JINR, Dubna, Russia*

[2] *Department of Physics, Faculty of Science, Cairo University, Egypt*

[3] *Dubna State University, Dubna, Russia*

[4] *Meshcheryakov Laboratory of Information Technologies, JINR, Dubna, Russia*

The report will present the details of the development of a software module for studying the chain of nanomagnets associated with the Josephson junction, taking into account various types of interaction between elements to output equations in symbolic form for further numerical modeling. In this case, the equations are reduced to the form of a system of ordinary differential equations resolved with respect to the derivative. The implementation is is carried out using the SymPy library for symbolic calculations, which provides powerful tools for working with symbolic expressions, equations and systems of equations. Its advantages include easy integration with other Python libraries, such as NumPy and Matplotlib. This made it possible to carry out numerical calculations on a par with symbolic ones in the prepared Jupiter Notebook, and to visualize the results of these calculations.

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