



FIDIMAG Performance Assessment Summary

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The FIDIMAG Audit identified that in the most computationally intensive part of the code, not enough work was being shared between threads resulting in inefficient parallelism. In addition, the code was using the sequential version of a library. Making the changes recommended in the report would greatly improve the speed of the application by making better use of the available cores.

The FIDIMAG code is a mixed Python and C code, parallelised with OpenMP, where the computationally intensive parts of the code are executed in C. The compiled code accounted for over 91% of the runtime which is good as Python is being effectively used as “glue” to connect different parts of compiled code and making it easy to use the FIDIMAG package.

FIDIMAG (Finite Difference atomistic and microMAGnetic solver) is a Python software package that allows users to define their magnetic system and choose from finite-temperature, atomistic simulations or continuous micromagnetic solvers. It uses the finite difference method and meshes can be defined on cubic and hexagonal lattices.

A full technical report can be found at https://pop-coe.eu/sites/default/files/pop_files/pop-ar-fidimag.pdf

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