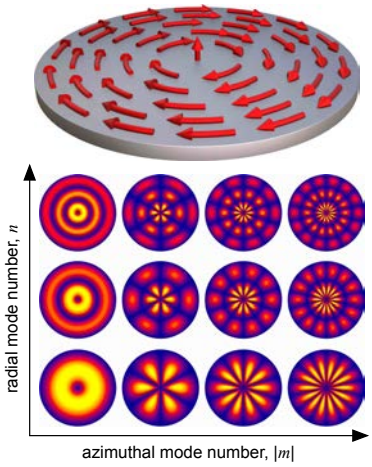
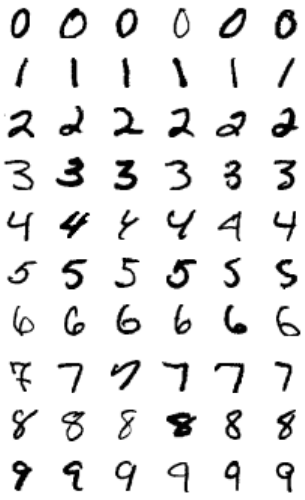
Postdoc offer

Pattern recognition with magnons

Magnons are elementary excitations in ordered magnetic systems, much like acoustic waves in elastic media. In ferromagnetic metals, the lower bound of magnon frequencies typically lie in the GHz range, which make them attractive for potential applications in information processing. One interesting feature of magnons is their strong nonlinearity, which makes conversion processes possible even under moderate external drive.



The goal of this research project is to explore through theory and simulation how strongly-driven magnons on nonuniform ground states, such as magnetic vortices (see Figure), could be used for non-Boolean computing tasks like as pattern recognition. Because of the nonlinearities, certain features of neuro-inspired computing might be reproducible with driven magnon modes. The research will involve aspects of nanoscale magnetism, nonlinear dynamical systems, and machine learning. The successful applicant is expected to hold a PhD in physics and possess extensive experience in some of these topics.



This work will be carried out at the Centre for Nanoscience and Nanotechnology and undertaken within the framework of the European project NIMFEIA, which is coordinated by the Helmholtz-Zentrum Dresden-Rossendorf in Germany and gathers together academic partners from Univ. Paris-Saclay, JG-Univ. Mainz (Germany), and Stiching Radboud Univ. (Netherlands), along with industry leaders GlobalFoundries (Dresden) and Infineon (Dresden).

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Start date **1 Oct 2022 – 1 Mar 2023**
Duration **2 years**

Location **Centre for Nanoscience and Nanotechnology (C2N)**
Palaiseau, France

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