Study of ferromagnetism systems

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Raphaël Côte\*, clémentine courtès\*
and Stéphane labbé†

\*Strasbourg University, CNRS UMR 7501, Institut de Recherche Mathématique Avancée (IRMA),

7 rue René Descartes, 67084 Strasbourg Cedex, France

raphael.cote@unistra.fr - clementine.courtes@unistra.fr

†Sorbonne Université, CNRS UMR 7598, Laboratoire Jacques-Louis Lions (LJLL), Boîte courrier 187, 75252 Paris Cedex 05, France stephane.labbe@sorbonne-universite.fr

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ABSTRACT

During the last decade, an increased interest in ferromagnetic materials has emerged, due to their new applications in data storage and nanoelectronics: digital data recording, lower storage energy costs, more efficient performances of the devices. Different research directions will be addressed in this mini-symposium.

- The ferromagnetic materials involve many multi-physical effects (thermal effects [2], magnetostriction, geometrical effects), which are interesting to take into account in the models.

- Optimizing the ferromagnetic performances, for instance by controlling the geometry of the nanowires, or the position of the domain walls (thin zones of magnetization reversal) [1], remains a major challenge.

**REFERENCES**

[1] G. Carbou, S. Labbé and E. Trélat, “Control of travelling walls in a ferromagnetic nanowire”, *Discrete Contin. Dyn. Syst. Ser. S*, Vol. **1**, pp. 51-59, (2008).

[2] S. Labbé and J. Lelong, “Stochastic modelling of thermal effects on a ferromagnetic nano particle”, *J. Dyn. Diff. Equat.*, Vol. **32**, pp. 1273-1290, (2020).