

Walls in a Junction of three Ferromagnetic Nanowires

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SUMMARY

This work is devoted to study the effect of a junction of ferromagnetic wires on the walls profile. More specifically, we focus on the effect of the junction of three wires when we connect perpendicularly a finite straight wire on a straight infinite horizontal wire. The variation of the magnetization satisfy the Landau Lifschitz equation coupled by conditions on the junction and the homogeneous Neumann boundary condition. We exhibit all the construction of the static solutions describing either one or two domains separated by a domain wall. We address the stability of these solutions using mobile frame technique to take into account only the perturbations which verify the physical constraint having norm is equal to one (see[2]). We also perform numerical simulations using Python with an explicit scheme in order to illustrate the obtained stability results.

Keywords: ferromagnetism, Landau-Lifschitz equation, stability, domain walls...

References

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