Abstract Submitted
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Dead magnetic surface layers near dynamic phase transitions PATRICIA RIEGO, ANDREAS BERGER, CIC nanoGUNE Consolider — We have performed a detailed study of the dynamic phase transition (DPT) for a magnetic layer system with surfaces subjected to an oscillatory external magnetic field in mean field approximation (MFA). Specifically, we focused our study on bulk-terminated surfaces, *i.e.*, we deal with multilayer systems that have the same exchange coupling strength between nearest neighbors everywhere, including at the surface. We are able to reproduce within the MFA the absence of a surface phase transition at the bulk critical point that was previously reported by Tauscher *et al.* utilizing Monte-Carlo simulations [1]. In addition, we observe that the DPT is also absent or at least severely suppressed for several layers below the surface, which exhibit susceptibility peaks that are four orders of magnitude smaller than the one corresponding to the bulk. Most importantly, we identify the reason for this "dead" surface behavior. The oscillatory magnetization M(t) response to the external magnetic field is not synchronous in between the surface and the bulk near the DPT. This lack of correlation prevents the layers from sufficiently supporting each other's dynamic ordering, so that the surface and the layers close to it cannot follow the bulk DPT.

[1] K. Tauscher *et al.* Phys. Rev. E **89**, 022121 (2014).

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