Comments and Corrections, Ph.D. Thesis Karin Everschor

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The following provides an (incomplete) list of comments on typos and errors in my Ph.D. Thesis: "Current-Induced Dynamics of Chiral Magnetic Structures" published in 2012. If you find further errors please let me know.

General

- Within the manuscript there are a few misprints of the magnetization direction vector, e.g. $\hat{\Omega}$ instead of $\hat{\Omega}$, or of the magnetization vector, e.g. $\boldsymbol{M}(r,t)$ instead of $\boldsymbol{M}(\boldsymbol{r},t)$.

- Note that an Erratum Phys. Rev. Lett. **110**, 209902 (2013) was published for the article Phys. Rev. Lett. **102**, 186602 (2009) which corrects the value of the effective emergent magnetic field per skyrmion in MnSi. The correct value is $B_{\text{eff}} \approx -13.5$ T instead of $B_{\text{eff}} \approx -2.5$ T, i.e., the field is roughly a factor of 5 larger. This does affect some numerical values presented in this work but not the general formalism.

Chapter 2: Skyrmions

- Page 4, Fig. 2.1, missing reference: A similiar version of the upper part of this figure has been published in Nat. Phys. **7**, 673 (2011).

- Page 5, Fig. 2.2, missing reference: A similiar version of this figure has been published in Nat. Phys. **7**, 673 (2011).

Chapter 7: Emergent Electrodynamics of Skyrmions

We have published parts of Chapter 7 (in particular the derivation of the emergent fields) and parts of Chapter 9 in an introductory article in J. Appl. Phys. **115**, 172602 (2014). The following sign errors and typos are corrected in the aforementioned paper.

- Page 59, Eq. (7.3) and Eq. (7.5), sign error: It should be $+J\boldsymbol{\sigma} \cdot \hat{\Omega}(\boldsymbol{r},t)$ instead of $-J\boldsymbol{\sigma} \cdot \hat{\Omega}(\boldsymbol{r},t)$. This sign error continues in Eq. (7.6): It should be $+J\sigma_z$ instead of $-J\sigma_z$ and in the emergent charges it should be: $q_{\downarrow}^e = +1/2$ ($q_{\uparrow}^e = -1/2$) instead of $q_{\downarrow}^e = -1/2$ ($q_{\uparrow}^e = +1/2$).
  Reason: A ferromagnetic coupling of the magnetic moment $\boldsymbol{\mu}$ of a particle and a magnetization direction $\hat{\Omega}(\boldsymbol{r},t)$ is described by $-\boldsymbol{\mu} \cdot \hat{\Omega}(\boldsymbol{r},t)$ times a positive coupling constant. For an electron with charge $-e$ it is $\boldsymbol{\mu} = -\frac{1}{2}g\mu_B\boldsymbol{\sigma}$.

- Page 59, Eq. (7.8), sign error: It should be $\boldsymbol{A}^e = +(i\hbar/q^e)U^\dagger\nabla U$ instead of $\boldsymbol{A}^e = -(i\hbar/q^e)U^\dagger\nabla U$.

Chapter 9: Current-Induced Forces Acting on the Skyrmion Lattice and Calculation of the Drift Velocity

We have published parts of Chapters 7 and 9 (in particular the discussion of the acting forces on the skyrmion) in an introductory article in J. Appl. Phys. **115**, 172602 (2014). The following error is corrected in the aforementioned paper.

- Pages 81 and 82, Fig. 9.1 and its description within the text: Note that the analogy between the "banana kick" picture and the skyrmion picture to explain the Magnus force cannot be drawn as far it is discussed here. In particular, the direction of the Magnus force in the skyrmion picture is independent of a "twist" and its direction of the skyrmion.