Addenda and Corrigenda for the Journal Publications of Christian Kuehn

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January 30, 2025

Abstract

This document is going to collect corrigenda to my publications. I got this (very good!) idea from a very similar document maintained by Stefan Gerhold at TU Wien. In particular, typographical and similar errors will be marked in blue while explanatory comments and addenda will be labeled green and errors requiring a more detailed correction will be marked in red. Unfortunately, the existence problem for errors is not very pleasant, e.g., suppose each written page is correct with 99% probability and the page count is x pages total then $\mathbb{P}$("no errors at all") $= (0.99)^x$. Unfortunately, this function decays a lot quicker than one would like. Hence, the existence of this document is certainly helpful for readers. Please send me any errors or typos you find and I am going to include them here; please make sure you know precisely, how a *correct* version should read to avoid false alarms.

[5]: Subscripts $\bar{Q}^K$ should be read with an indicator function preceded, i.e. instead of $()_{\bar{Q}^K}$, it should be $\mathbf{1}_{\bar{Q}^K}$. Affected by this are equation (10) and the expression in line following that equation, and equation (15).

[7]: In formula (12), replace $-2g_{xy}$ by $-2g_{xy}^2$.

[8]: In Section 9, the numerical value for the lag "$k = 0.002$" should be read as "time lag $\delta t = 0.002$" to be consistent with the formula for $R(k)$ in the notation, i.e., the lag is the time lag, which corresponds to an index step k in the formula for $R(k)$.

[6]: On page 3 of the article, the reference [?,36] is incorrect. The question mark should be a reference to the paper [11].

[2]: Lemma 4.8 contains a mistake, which implies a weaker regularity estimate than the one stated in Proposition 4.11. This does not affect the proof of Theorem 2.1, but Theorems 2.2 and 2.3 only follow from the given proof if either the space dimension d is equal to 2, or the nonlinearity $F(U, V)$ is linear in V. To fix this problem an erratum [3] has been provided, which gives a proof of Theorems 2.2 and 2.3 valid in full generality using a modified fixed-point formulation.

[9]: On page 4, replace in the definition of $\mathbb{P}_r$ the conditioning "$x_j^* = r$" by "$x_j^* \leq r$".

[10]: Replace in the second term in equation (24) the term $\mathrm{e}^{\int_0^t A(s)\ \mathrm{d}s}$ by $\mathrm{e}^{\int_0^t A(s)\ \mathrm{d}s + o(t^2)}$ as we only use the first term in the Magnus expansion here. Similarly, in equation (39) replace $\mathrm{e}^{\int_{t_0}^t A(r)\ \mathrm{d}r}$ by $\mathrm{e}^{\int_{t_0}^t A(r)\ \mathrm{d}r + o(t^2)}$. On p.993 replace in line 2 "zero" by "zero to first order in time". Similarly, replace in Proposition 4.3 "yields" by "yields using a first-order in-time approximation". After Proposition 4.3 insert the sentence: "Calculating higher orders in-time numerically shows a discrepancy for the entry-exit relationship." and continue with "Furthermore, the formulas for FTLE...".

[1]: Lemma 4.8 requires some fixing. In the first type of resonances (R1) one needs to consider $n = 3 - \frac{1}{m}$ with $m \in \mathbb{N}$ such that $m \geq 2$. As detailed in Lemma 4.5, a resonance occurs for $n = 2$ already at the linear level of the dynamical system (4.24) under consideration. The resonances in (R2), on the other hand, apply to $n = 1$ and it should be written $n = 3 - q_1 - q_3$ after equation (4.38). While in the case

$n = 1$ in principle a resonance may occur, Proposition 4.9 is still applicable because the denominator $k + (3 - n)\ell + p - 1$ in the representation (4.50),

$$\mathcal{T}g(x_1, x_2, x_3) := \sum_{(k,\ell,p)\in\mathcal{I}} \frac{\partial_{x_1}^k \partial_{x_2}^\ell \partial_{x_3}^p g(0,0,0)}{k + (3-n)\ell + p - 1} x_1^k x_2^\ell x_3^p$$

with $\mathcal{I} := (\mathbb{N}_0)^3 \setminus \{(0,0,0),(1,0,0),(0,0,1)\}$, of the linear solution operator $\mathcal{T}$ remains nonzero if $(k,\ell,p) \in \{(2,0,0),(1,0,1),(0,0,2)\}$. Hence, the validity of the main results, Theorems 3.1–3.3, is unaffected.

[4]: Example 5.4 needs to be adjusted. Either one has to write the example for the three-sphere $\mathbb{S}^3$ or use a projection of the measure from the special orthogonal group $SO(3)$ to $\mathbb{S}^2$. The reason is the lack of group structure for spheres of even dimension.

References

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