Erratum to the 2nd edition of Nonlinear Dynamics and Quantum Chaos

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In the following we list typos and misprints of the 2nd edition of the Springer book Nonlinear Dynamics and Quantum Chaos [1].

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CORRECTIONS

- sec. 2.1 p. 9, eq. (2.1.5) and the sentence before: the correct version is: *Defining the composite vector* $\vec{y}(t) = \left(\vec{y}_1(t) \equiv \vec{x}(t), \vec{y}_2(t) \equiv \dot{\vec{x}}(t)\right)$ *and* $f(\vec{y}(t)) = (\vec{y}_2(t), F(\vec{y}_1(t))/m)$, *we obtain*

$$\dot{\vec{y}}(t) = f(\vec{y}(t)). \tag{1}$$

- sec. 3.2, p. 25, l. 5-6: it should read: $H(q, p, t) = p \cdot \dot{q} - \mathcal{L}$

- sec. 3.5, p. 39, l. 2-4 after eq. (3.5.1): the sentence should be substituted by the following ones: *The number of independent conserved quantities is now, in contrast to the two-body Kepler problem not just six, but seven, the total energy, the total momentum and total angular momentum. So we are left with four coupled differential equations in phase space.*

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- sec. 3.6.2.2, p. 43, in eq. (3.6.14) on the r.h.s. the following first-order term from the 2D Taylor expansion is missing:

$$\xi \frac{\partial^2 H_0}{\partial \bar{x} \partial \bar{p}} \tag{2}$$

  This does not change the conclusions since the average over $\xi(t) \propto \sin(\omega t)$ will give zero.

- sec. 4.11.3, p. 145, eq. (4.11.11) should read:

$$\frac{d\phi_i}{dt} = \omega_i + \frac{K}{N} \sum_{j=1}^{N} \sin(\phi_j - \phi_i). \tag{3}$$

- Then the next eq. (4.11.12) on p. 146 should read:

$$R e^{\mathrm{i}\Phi} = \frac{1}{N} \sum_{j=1}^{N} e^{\mathrm{i}\phi_j}. \tag{4}$$

- In the next eq. (4.11.13) there is a sign error, and the corrected version is:

$$\frac{d\phi_i}{dt} = \omega_i - KR \sin(\phi_i - \Phi) = \omega_i + KR \sin(\Phi - \phi_i). \tag{5}$$

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[1] S. Wimberger, Nonlinear Dynamics and Quantum Chaos: An Introduction, Springer, Cham, 2023, 2nd and enlarged edition, https://link.springer.com/book/10.1007/978-3-031-01249-5