ERRATA for
Differential Geometry and Lie Groups for Physicists
July 09, 2024
(Please, let me know if you come across any further errors. Thanks a lot.)
The symbol $\mapsto$ is used as an abbreviation for "is to be replaced by".

Typos and small inconsistencies, which should not cause problems

- **p. 6 :** in 1.1.5: A set $A \in \mathbb{R}^n \mapsto$ A set $A \subset \mathbb{R}^n$ (Jakub Köry)
- **p. 15 :** within the figure: $(x, f(x)) \mapsto (x, \hat{f}(x))$ (Dominik Rist)
- **p. 16 :** in the middle: those points in $x \in \mathbb{R}^n$ where $\mapsto$ those points $x \in \mathbb{R}^n$ where
- **p. 40 :** in 2.4.10: $t(v, \alpha) \mapsto t(v; \alpha)$ and $\hat{1}(v, \alpha) \mapsto \hat{1}(v; \alpha)$ (Xian Gao)
- **p. 47 :** in 2.5.4 $i)$ $\dots \partial_j \mapsto \dots \otimes \partial_j$ (Lukáš Tomek)
- **p. 68 :** in 4.1.11 (iii): say; this is an observer $\mapsto$ say, this is an observer
- **p. 76 :** in 4.4.2 (ii) (as well as a bit later) missing hat on the unit operator $\hat{1}$ (Marta Bakšová)
- **p. 78 :** in 4.5.1: 3× missing hat on the unit operator $\hat{1}$ (Marta Bakšová)
- **p. 78 :** in 4.5.3: $\varepsilon \mapsto \epsilon$ (Carlos Guedes)
- **p. 100 :** in (5.2.9) $iii)$ $(v, \dots w) \mapsto (v, \dots, w)$ (Dominik Rist)
- **p. 101 :** in 5.2.12 $(e_c, \dots e_d) \mapsto (e_c, \dots, e_d)$ (Lukáš Tomek)
- **p. 104 :** hint to (5.3.4) $i)$ $\dots t'_1 \otimes (\alpha \otimes \alpha) \otimes t_2 \dots \mapsto \dots + t'_1 \otimes (\alpha \otimes \alpha) \otimes t_2 + \dots$ (Dominik Rist)
- **p. 108 :** until the end of chapter 5, $\varepsilon \mapsto \epsilon$ (Carlos Guedes)
- **p. 120 :** hint to (5.8.5) - $i)$ is missing (Dominik Rist)
- **p. 128 :** missing symbol • immediately after exercise 6.1.8
- **p. 133 :** beginning of 6.3: references to Section 5.7 and Section 5.8 are reversed (Lukáš Tomek)
- **p. 135 :** in 6.3.4 $z^1, \dots z^n \mapsto z^1, \dots, z^n$ (Dominik Rist)
- **p. 172 :** prior to 8.3.1: $D \in M \mapsto D \subset M$ (Dominik Rist)
- **p. 179 :** 8.5.1: if in diagram was M (not E^3), $*^{-1}$ should be under arrows (Dominik Rist)
- **p. 181 :** in 8.5.4 (v): $(\ \text{curl}\mathbf{A}) \mapsto (\text{curl}\mathbf{A})$ (Carlos Guedes)
- **p. 230 :** in the hint to 11.5.2 $f(g(t) \mapsto f(g(t))$
- **p. 259 :** (12.2.13) (iii): $\text{Hom}_G(V_1, V_2) \mapsto \text{Hom}_G(V, W)$ (Dominik Rist)
- **p. 270 :** in 12.4.1 (iv): element form $K \mapsto$ element from K (Carlos Guedes)
- **p. 284 :** in 12.6.2 (iii) in the 2-nd formula 3 × missing star on $\mathcal{G}$ (Marta Bakšová)
- **p. 285 :** in the last formula $k(X, [Y, Z] \mapsto K(X, [Y, Z])$ (Marta Bakšová)
- **p. 318 :** in (13.4.14): $G_x = e \mapsto G_x = \{e\}$ (Dominik Rist)
- **p. 338 :** text after (14.2.3): Hamiltonian system (M, ω, dH) is also denoted as (M, ω, H) (Dominik Rist)
- **p. 341 :** in the hint to 14.2.6 $P(q, p, t) \mapsto P(q, p, t))$ (Tomáš Bzdušek)
- **p. 389 :** omit part (iii) in the Hint to 15.3.14 (there is no (iii) in the Exercise :-)
- **p. 389 :** in footnote $-T_{(jk)}^{\ \ \ i} \mapsto -T_{(jk)}{}^i$
- **p. 403 :** in the hint to 15.5.4: $A(C(e^a \otimes e_b)\rangle \mapsto A(C(e^a \otimes e_b))$ (Carlos Guedes)
- **p. 405 :** in 15.5.8 (i): $R^{ns}_{ijkl} \mapsto R^{\{nc\}}_{ijkl}$; nc = normal coordinates (Carlos Guedes)
- **p. 412 :** in the hint to 15.6.10 replace $0 \wedge 0 + \alpha \wedge (-\alpha) = 0$ with $0 \wedge \alpha + \alpha \wedge 0 = 0$
- **p. 412 :** in 15.6.11: *constant* $\cdot K(x) = 1/\rho^2 \mapsto$ *constant*. Namely, $K(x) = 1/\rho^2$ (Carlos Guedes)
- **p. 438 :** in the solution to 16.2.4 (ii): $\dots = -\epsilon \oint_{\partial \hat{\mathcal{D}}_3} j(t_0, \mathbf{r}) \cdot d\mathbf{S} \mapsto \dots = -\epsilon \oint_{\partial \hat{\mathcal{D}}_3} \mathbf{j}(t_0, \mathbf{r}) \cdot d\mathbf{S}$ (Carlos Guedes)
- **p. 439 :** in the hint to 16.2.6: $dt \wedge + \mathbf{B}.d\mathbf{r} \mapsto dt \wedge \mathbf{B}.d\mathbf{r}$ (Carlos Guedes)
- **p. 441 :** in 16.3.1 (ii) (and the hint): $\mathbf{a} \mapsto \mathbf{A}$ (Carlos Guedes)
- **p. 455 :** in the hint to 16.4.10: $\dots = 2.2 - 4 \mapsto \dots = 2 \times 2 - 4 = 0$; the same in (iv) (Carlos Guedes)
- **p. 470 :** in 16.6.4 (v) $\dot{y}^a \dot{y}^b \mapsto \dot{y}^b \dot{y}^c$ (Denis Kochan)
- **p. 471 :** $(dy^a, dy^b) \mapsto (dy^b, dy^c)$ in the middle, after the black circle (Denis Kochan)
- **p. 472 :** in 16.6.5 (iii) $M)] \mapsto M]$ (Denis Kochan)
- **p. 476 :** $(dy^a, dy^b)_g \mapsto (dy^b, dy^c)_g$ in line 3 (Denis Kochan)
- **p. 479 :** two lines above 17.1.1: $\mathcal{O} \subset TM \mapsto \mathcal{O} \subset M$ (Derek Elias)
- **p. 484 :** just above 17.2.5 replace $b_2 \mapsto b_2(x)$ (Lukáš Tomek)
- **p. 487 :** 17.4: $\text{Ver}_b \mapsto \text{Ver}_b\mathcal{B}$ (Dominik Rist)

- **p. 496 :** in the hint to 17.6.5: $B^a\partial/\partial p_a \mapsto B_a\partial/\partial p_a$ (Carlos Guedes)
- **p. 521 :** solution of 18.5.3 (in the middle of the page):
  $S[\gamma]+\epsilon\int_\gamma(\dots)+\int_{\partial\gamma}(\dots) \mapsto S[\gamma]+\epsilon\int_\gamma(\dots)+\epsilon\int_{\partial\gamma}(\dots)$ (Carlos Guedes)
- **p. 527 :** in 19.1.4 (iii): Ker $\pi_* \mapsto$ Ker π_{*e} (Dominik Rist)
- **p. 538 :** in 19.4.1 (iii): as in 19.1.4 (iii) (Sebastian Brezina)
- **p. 547 :** text after 19.6.3: $(V,\rho)\mapsto(V,\rho^r_s)$ (Sebastian Brezina)
- **p. 549 :** text after 19.6.4: as after 19.6.3 (Sebastian Brezina)
- **p. 569 :** in the hint to (20.4.2) replace iv) $\mapsto$ v) (Dominik Rist)
- **p. 572 :** hint to (20.4.6): 3 times $\rho'(\omega)\dot\wedge\alpha$(on arguments) $\mapsto(\rho'(\omega)\dot\wedge\alpha)$(on arguments)
  (Hana Hluchá and Dominik Rist)
- **p. 574 :** after 20.4.10, $\omega^c_d\mapsto\omega^c_b$ (Jozef Sivek)
- **p. 576 :** (20.4.14): $\rho(g_1)\otimes\rho(g_2)\mapsto\rho_1(g_1)\otimes\rho_2(g_2)$ (Dominik Rist)
- **p. 581 :** in 20.5.10 (i), $\omega^c_a\Phi_{cb}+\omega^c_a\Phi_{cb}\mapsto\omega^c_a\Phi_{cb}+\omega^c_b\Phi_{ac}$ (Denis Kochan)
- **p. 582 :** footnote: fiber over $p_1\in P_1\mapsto$ fiber given by $p_1\in P_1$, detto for $f(p_1)\in P_2$
- **p. 588 :** in (21.1.1): (16.3.6) $\mapsto$ (16.3.7) (Dominik Rist)
- **p. 598 :** $\mathcal{A}\dot\wedge\lambda\mapsto\mathcal{A}\wedge\lambda$ and $\mathcal{F}\dot\wedge\lambda\mapsto\mathcal{F}\wedge\lambda$ in 21.2.4, (ii) and (iv) (Ján Smrek)
- **p. 613 :** in 21.5.4, hint to (i), in the expression $\mathcal{J}^i\mapsto\dots$, replace
  $\phi^a(\mathcal{D}\phi)^b\mapsto\phi^c(\mathcal{D}\phi)^d$ (Denis Kochan)
- **p. 615 :** the text just before 21.5.8: $\Phi=\Phi^{a\alpha}E_a\times E_\alpha\mapsto\Phi=\Phi^{a\alpha}E_a\otimes E_\alpha$
- **p. 619 :** 21.6.1, end of the hint: $\int_{\mathcal{U}}s^i dJ_i(\psi)\mapsto-\int_{\mathcal{U}}s^i dJ_i(\psi)$
- **p. 642 :** line 6: "all of them are needed" - the middle one is not necessary
  (it is clear e.g. from a computer visualization created by my son Stanislav Fecko :-)
- **p. 653 :** $L,P\mapsto L,R$ (L = left, R = right) (Denis Kochan)
- **p. 670 :** in 22.5.12 $L,P\mapsto L,R$ (L = left, R = right; see p.653) (Denis Kochan)
- **p. 680 :** $\mathbb{Z}\times Z\mapsto\mathbb{Z}\times\mathbb{Z}$ (Peter Rapčan)
- **p. 680 :** near the bottom: see (6.1.6) $\mapsto$ see (6.1.7) (Dominik Rist)
- **p. 684 :** Riemann 1828 $\mapsto$ 1826 (Josef Mikeš)

Inconsistencies and errors which might cause problems

- **p. 21 :** the concepts "head" and "tail" of an arrow are reversed
  (Mariano Hermida de La Rica)
- **p. 44 :** in 2.4.18, g may come out degenerate, in general; the "proof" of non-degeneracy is erroneous;
  the statement is, however, true for positive definite metric tensors h;
  see also errata comment to 3.2.1 and the paragraph prior to 8.2.8
  (Libor Šnobl)
- **p. 52 :** in footnote: $g_x(V,V)\mapsto\sqrt{g_x(V,V)}$
  (Lukáš Tomek)
- **p. 59 :** in the hint to 3.1.7, the right-hand sides are reversed
- **p. 60 :** in 3.2.1, g may come out degenerate, in general; the statement is, however, true for positive definite
  metric tensors h; see also errata comment to 2.4.18
- **p. 63:** in solution of (3.2.10), the factors 1/2 are to be omitted in diagonal terms
  (Gadi Trocki Reibstein)
- **p. 67 :** 4.1.8 is only safe for complete fields; in general, even Φ_ϵ may be problematic as (whole) $M\to M$,
  see the discussion just before 4.1.1
  (Lars Dehlwes)
- **p. 68 :** in 4.1.11 *i)* inverse map is needed: $\Phi^*_t x^i\equiv x^i\circ\Phi_t\mapsto(\Phi^{-1}_t)^*x^i\equiv x^i\circ\Phi^{-1}_t$
  (Mariano Hermida de La Rica)
- **p. 71 :** in the hint to (4.2.4): in the direction of x and $y\mapsto$ against x and y; similarly rotate by minus $\pi/2$
  (Gadi Trocki Reibstein)
- **p. 72 :** in 4.3.1 *i)* for $|\epsilon|\ll 1\ \dots\ A+\epsilon\mathcal{L}_V A+o(\epsilon^2)\mapsto$ for $\epsilon\to 0\ \dots\ A+\epsilon\mathcal{L}_V A+o(\epsilon)$
  (Vyacheslav Patkov)
- **p. 73 :** in (4.3.2): derivative $D\mapsto$ derivation D
  (Gadi Trocki Reibstein)
- **p. 80 :** in the hint to (4.5.7): $\sqrt{g(\partial_r,\partial_r)}\equiv g_{rr}=1\mapsto\sqrt{g(\partial_r,\partial_r)}\equiv\sqrt{g_{rr}}=1$
  (Gadi Trocki Reibstein)

- **p. 91 :** in 4.6.26 : $\Phi_t^* x^i \equiv x^i \circ \Phi_t \mapsto (\Phi_t^{-1})^* x^i \equiv x^i \circ \Phi_t^{-1}$ (see 4.1.11 above)
  (Jonáš Dujava)
- **p. 110 :** in 5.6.6 *ii*) "Δ^a_b is" $\mapsto$ "Δ^a_b is (up to a sign)" (Δ^a_b is known as the "algebraic complement" and it differs by a factor $(-1)^{a+b}$ from the minor alone)
  (Vlado Černý)
- **p. 111 :** in 5.6.8 *ii*) $\alpha_A^{eB} \mapsto \alpha_A^{eB^{-1}}$
  (Dominik Rist)
- **p. 117 :** hint to 5.7.7: $ii) \mapsto i)$
  (Jonáš Dujava)
- **p. 135 :** in 5.8.3: $\lambda^{n-2p} \mapsto |\lambda|^{n-2p}$
  (Jonáš Dujava)
- **p. 123 :** in (5.8.10) v) replace $d\Sigma_{ab} \mapsto -d\Sigma_{ab}$
  (Dominik Rist)
- **p. 127 :** in the second line (hint to (6.1.3)) $(xyz)^2 \mapsto (xyz)^2 dz$
  (Christophe Nozaradan)
- **p. 138 :** in (6.3.10) for $T^2 \subset E^3$: $d\varphi \wedge d\psi \mapsto d\psi \wedge d\varphi$ (orientation)
  (Sebastian Brezina)
- **p. 148 :** 7.2.3(i): $(P_0, P_1, P_2) \mapsto (P_0, P_2, P_1)$
  (Jakub Imriška)
- **p. 151 :** in the formulation of Stokes theorem: $c \in C_{p+1} \mapsto c \in C_{p+1}(M)$
  (Jonáš Dujava)
- **p. 158 :** hint to 7.6.11: at the end of Section 4.2 $\mapsto$ in the text before 4.1.12
  (Lukáš Tomek)
- **p. 167 :** in 8.2.2 *iii*): $o(\epsilon^2) \mapsto o(\epsilon)$
  (Jonáš Dujava)
- **p. 168 :** hint to 8.2.5: $(f'r^2 + 2rf)\omega_g \mapsto (f' + 2f/r)\omega_g$
  (Lukáš Konečný)
- **p. 170 :** in the first figure in 8.2.9 the letter D is used incorrectly (it is not the domain D mentioned in the text; some other letter should denote a part of the *boundary* ∂D of the domain D)
  (Vlado Černý)
- **p. 177 :** hint to 8.3.13: $(n-2)(\dots,\dots)_g \mapsto (n-2)(\dots,\dots)_{f^*g} \equiv (n-2)\sigma^{-2}(\dots,\dots)_g$
  (Erik Malm)
- **p. 181 :** (8.5.4): sgn $g = 1$ also needed (in E^3 ok; in general on 3-dim M one has div $= *d*^{-1}\flat$)
  (Dominik Rist)
- **p. 191 :** 6-th line: reference to pairing $\int_c \alpha$ from (7.4.1) is based on its non-degeneracy w.r.t. c
  (Dominik Rist)
- **p. 217 :** hint to 11.1.6 (iv): of item (iv) $\mapsto$ of item (iii)
  (Carlos Guedes)
- **p. 219 :** in 11.1.10 *ii*) $\hat{V}^i_j = x^i_k \partial^k_j \equiv (x\partial)^i_j \mapsto \hat{V}^i_j = x^k_j \partial^i_k \equiv (\partial x)^i_j$
  (Christophe Nozaradan)
- **p. 219 :** in 11.1.10 *iv*) $\langle \alpha^i_j, V^k_l \rangle \mapsto \langle \hat{\alpha}^i_j, \hat{V}^k_l \rangle$
  (Marta Bakšová)
- **p. 220 :** solution of 11.1.12: $\begin{pmatrix} \cos\varphi & -\sin\varphi \\ -\sin\varphi & \cos\varphi \end{pmatrix} d \begin{pmatrix} \dots & \dots \\ \dots & \dots \end{pmatrix} \mapsto \begin{pmatrix} \cos\varphi & -\sin\varphi \\ \sin\varphi & \cos\varphi \end{pmatrix} d \begin{pmatrix} \dots & \dots \\ \dots & \dots \end{pmatrix}$
  (Carlos Guedes)
- **p. 229 :** in the hint to 11.4.8 replace 11.1.14 $\mapsto$ 11.1.13, 11.1.15
- **p. 233 :** after 11.7.3 (line 3 from bottom): 11.7.1 $\mapsto$ 11.7.3
  (Carlos Guedes)
- **p. 236 :** 11.7.10: $k^2 \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \mapsto k^2 \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}$ (Carlos Guedes)
- **p. 250 :** in the hint to 12.1.11: $\equiv n \sum_{j=1}^n h_0 \mapsto \equiv \sum_{j=1}^n h_0$
  (Pavol Bartoš)
- **p. 251 :** in 12.1.13 (ii): scalar product $\hat{h}_0$ of type $(1,-1) \mapsto$ indefinite scalar product $\hat{h}_0$ with signature $(+,-)$
  (Carlos Guedes)
- **p. 251 :** in 12.1.13 (ii), on the right: $\hat{h}_0(v,w) \mapsto \hat{h}(v,w)$
- **p. 275 :** hint to 12.4.11 (iii): $(\hat{1} \otimes \rho'_1(X) + \rho'_2(X) \otimes \hat{1}) \mapsto (\rho'_1(X) \otimes \hat{1} + \hat{1} \otimes \rho'_2(X))$

(Carlos Guedes)

- **p. 296 :** hint to 13.2.7 (i): proposed f is not well-defined; the map should read
  $\pi(g) \mapsto \pi'(gk^{-1})$ if $H' = kHk^{-1} = I_k H$, or, equivalently, $f \circ \pi = \pi' \circ R_{k^{-1}}$;
  (Jan Vysoký; my detailed exposition see in Additional material to the book)
- **p. 307 :** footnote: $= x^{\nu}_{A} \sigma_\nu A^+ =\ \mapsto\ = x^\nu A \sigma_\nu A^+ =$
  (Carlos Guedes)
- **p. 318 :** in 13.4.14, formal definition of effective action is incorrect (informal explanation is ok :-):
  stabilizer is trivial at least somewhere $\mapsto \bigcap_{x\in M} G_x = \{e\}$
- **p. 321 :** 13.5.4 (iii): $\hat{\rho}_X A \mapsto \hat{\rho}'_X A$
  (Dominik Rist)
- **p. 338 :** in 14.2.3: 6.3.9 $\mapsto$ 6.3.10
  (Tomáš Bzdušek)
- **p. 338 :** in 14.2.3 (the hint): "find the field i_{ζ_H}" $\mapsto$ "find the field ζ_H"
  (Lenka Moravčíková)
- **p. 351 :** after 14.5.3: (12.3.18) $\mapsto$ (12.3.19)
  (Marek Horňák)
- **p. 351 :** after 14.5.3: (12.8) $\mapsto$ (12.6)
  (Dominik Rist)
- **p. 352 :** in 14.5.5 (iv): as we mentioned in (11.8) $\mapsto$ as we mentioned in (12.6)
  (Milan Jurči)
- **p. 354 :** in the 4-th line of 14.6 replace (12.3.18) $\mapsto$ (12.3.19)
  (Dominik Rist)
- **p. 378 :** in 15.2.5 (ii) the word *autonomous* is to be omitted (t is in $S^i_j(t)$)
- **p. 381 :** in 15.2.11 (iii) the word *autonomous* is to be omitted (t is in $S^{\cdots}_{\cdots}(t)$)
- **p. 391 :** 15.4.3 (i): $\nabla_{\dot{\hat{\gamma}}} \dot{\hat{\gamma}} = \sigma'' \dot{\hat{\gamma}}\ \mapsto\ \nabla_{\dot{\hat{\gamma}}} \dot{\hat{\gamma}} = \sigma'' \dot{\gamma}$
  (Samuel Hapák)
- **p. 391 :** hint to 15.4.3 (i): $\nabla_{\dot{\hat{\gamma}}} \dot{\hat{\gamma}} = \sigma'(\sigma''\dot{\gamma} + \sigma' \nabla_{\dot{\gamma}} \dot{\gamma})\ \mapsto\ \nabla_{\dot{\hat{\gamma}}} \dot{\hat{\gamma}} = \sigma''\dot{\gamma} + (\sigma')^2 \nabla_{\dot{\gamma}} \dot{\gamma}$
  (see more details in Additional material to the book)
- **p. 402 :** in 15.5.3 replace reference (4.3.1) $\mapsto$ (4.3.2)
  (Dominik Rist)
- **p. 403 :** 15.5.4 (ii): $\nabla_V = \mathcal{L}_V + (\nabla V)\ \mapsto\ \nabla_V = \mathcal{L}_V + (\nabla V) + T(V,\ .\ )$
  (see more details in Additional material to the book)
- **p. 416 :** 15.6.19 (i) and (ii): $\Gamma^\rho_{\mu\nu} \mapsto \Gamma^\rho_{\nu\mu}$
  (Oliver Tennert)
- **p. 417 :** 15.6.20 (iii): contortion term K_{abc} is to be added if torsion is present
  (Ladislav Hlavatý)
  (see more details in Additional material to the book)
- **p. 418 :** 15.6.22: α in the last two lines unfortunately denotes "something completely different"
- **p. 427 :** the case $\lambda = 1/2$ corresponds to the RLC-connection only in the case when $\mathcal{K}$ is nondegenerate
  (i.e. for semi-simple group G)
- **p. 429 :** $F^{\mu\nu}{}_{;\nu} = j^\mu\ \mapsto\ F^{\mu\nu}{}_{;\nu} = -j^\mu$ (as on p. 456)
  (Sebastian Brezina)
- **p. 439 :** hint to (16.2.6): $dt \wedge +\mathbf{B} \cdot d\mathbf{r} \mapsto dt \wedge \mathbf{B} \cdot d\mathbf{r}$
  (Lukáš Tomek)
- **p. 447 :** hint to 16.3.9: $S_{\text{int}}[\Phi_{\epsilon *}\gamma; A] \mapsto S_{\text{int}}[\Phi_\epsilon(\gamma); A]$
  (Dominik Rist)
- **p. 451 :** in 16.4.3 (i): $(\eta A)_{\mu\nu} M^{\mu\nu} \mapsto (\eta A)_{\mu\nu} M^{\nu\mu}$
  (Jan Vysoký)
- **p. 451 :** in (16.4.4) $\mathcal{J} \mapsto \tilde{\mathcal{J}}$
  (Sebastian Brezina)
- **p. 456 :** in (16.4.11) $F^{\mu\nu}{}_{;\nu} = j^\mu\ \mapsto\ F^{\mu\nu}{}_{;\nu} = -j^\mu$ (as on p. 429)
  (Sebastian Brezina)
- **p. 454 :** in 16.4.7 (iv): $E = \int_V [(\partial_t \phi)^2 + (\nabla\phi)^2 + m^2\phi^2] dV \mapsto E = \frac{1}{2}\int_V [(\partial_t \phi)^2 + (\nabla\phi)^2 + m^2\phi^2] dV$
  (Carlos Guedes)
- **p. 465 :** text before 16.5.9: Section 19.6 $\mapsto$ Section 21.7
- **p. 468 :** in 16.6.1: $\int_{\mathcal{U}} g^{\mu\nu} (\partial_\mu \phi)(\partial_\nu \phi) \omega_g \mapsto \frac{1}{2} \int_{\mathcal{U}} g^{\mu\nu} (\partial_\mu \phi)(\partial_\nu \phi) \omega_g$
  (Carlos Guedes)

- **p. 473 :** in 16.6.6:(iv) $\frac{\lambda}{2-m}\hat{G} \mapsto \frac{2-m}{\lambda}\hat{G}$
  (Carlos Guedes)
- **p. 469 :** in the last formula of 16.6.3 and also in the second formula after it the same object is denoted both as γ and f
  (Denis Kochan)
- **p. 516 :** the hint to 18.4.11: $d(\mathbf{P}+\mathbf{a}).\wedge d\mathbf{R} \mapsto d\mathbf{P}.\wedge d(\mathbf{R}+\mathbf{a})$
  (Marcel Serina)
- **p. 519 :** the hint to 18.5.1: $i_\Gamma dt = 0 \mapsto i_\Gamma dt = 1$
  (Carlos Guedes)
- **p. 528 :** in the hint to 19.2.2: see (17.3.8) $\mapsto$ see (17.2.6)
  (Dušan Plašienka)
- **p. 535 :** (19.3.2) (iii): for arbitrary λ, $f=0$ is a solution; non-zero solution f only exists for $\lambda = 1$
  (Dominik Rist)
  (see more details in Additional material to the book
- **p. 540 :** in 19.4.4 (ii): correct version of the expression of H_i reads:
  $H_i \equiv \partial_i^h := \partial_i - \langle \hat{\omega}_b^a, \partial_i\rangle y_c^b \partial_a^c \equiv \partial_i - \langle \omega_b^a, \partial_i\rangle \xi_{E_a^b}$
  (so that the hat on the *first* ω_b^a is missing)
  (Jan Vysoký)
- **p. 548 :** in 19.6.4, in the footnote 413: (11.1.6) $\mapsto$ (11.1.8)
  (Dominik Rist)
- **p. 549 :** in the hint to (19.6.5): (19.5.1) $\mapsto$ (19.5.2)
  (Dominik Rist)
- **p. 555 :** in the hint to 20.1.6: see (11.1.5), (11.1.8) $\mapsto$ see (10.1.5), (13.1.8)
  (Dušan Plašienka)
- **p. 563 :** in the hint to 20.2.7: see (19.4.2) $\mapsto$ see (19.2.4)
  (Alžbeta Miklášová)
- **p. 590:** 21.1.3 (iv): $(\partial_\mu - iA_\mu)\phi^a(\partial^\mu + iA^\mu)\phi^b \;\mapsto\; (\partial_\mu\phi^a - A_\mu\epsilon_{ac}\phi^c)(\partial^\mu\phi^b - A^\mu\epsilon_{bd}\phi^d)$,
  (students from the group 4ftf from summer term 2013 :-)
- **p. 590:** 21.1.3 (iv):

$$\begin{pmatrix} \cos\alpha(x) & -\sin\alpha(x) \\ \sin\alpha(x) & \cos\alpha(x) \end{pmatrix} \begin{pmatrix} \phi^1 \\ \phi^2 \end{pmatrix} \mapsto \begin{pmatrix} \cos\alpha(x) & -\sin\alpha(x) \\ \sin\alpha(x) & \cos\alpha(x) \end{pmatrix}^{-1} \begin{pmatrix} \phi^1 \\ \phi^2 \end{pmatrix}$$

  (Debora Pastvová)
- **p. 593:** $\rho' = 0, \mathcal{D} = d$ - presence of ρ' is *not yet* clear, here :-(; it *should* be clear after 21.2.4
- **p. 602 :** 21.3.2 (iii): $B^{-1}SB + B^{-1}\dot{B} \;\mapsto\; B^{-1}SB - B^{-1}\dot{B}$
  (Jan Vysoký)
- **p. 612 :** 21.5.4 (i): $\mathcal{J}^i = -k^{ij}\rho_{abj}\phi^a(\mathcal{D}\phi)^b \;\mapsto\; \mathcal{J}^i = k^{ij}\rho_{abj}\phi^a(\mathcal{D}\phi)^b$
  (Jan Vysoký)
- **p. 616 :** 21.5.10 (i):

$$A = -\frac{i}{2}\begin{pmatrix} A_3 & A_1 - iA_2 \\ A_1 + iA_2 & -A_3 \end{pmatrix} + iA_4 \quad\mapsto\quad \mathcal{A} = -\frac{i}{2}\begin{pmatrix} A_3 & A_1 - iA_2 \\ A_1 + iA_2 & -A_3 \end{pmatrix} + inA_4$$

  (Tomáš Dado)
- **p. 643 :** in 22.1.7 (iv) $C(1957,0)$: $\mathbb{H}(4.16^{244}) \oplus \mathbb{H}(4.16^{244}) \mapsto \mathbb{H}(2.16^{244}) \oplus \mathbb{H}(2.16^{244})$
  (Yu Yue)
- **p. 645 :** 22.2.1: results $\text{Pin}\,(1,1) = O(1,1)$ and $\text{Pin}\,(0,2) = O(2)$ are false (it is more complicated)
  (Jan Vysoký)
- **p. 646 :** hint to 22.2.1: $\alpha(\phi)\alpha(\psi) = \beta(\phi+\psi) \mapsto \alpha(\phi)\alpha(\psi) = \beta(\psi - \phi)$
  (Peter Rapčan)
- **p. 665 :** version 4 in 22.5.4 is only true for RLC (i.e. it needs vanishing torsion, see 15.6.9)
  (Denis Kochan)
- **p. 687 :** in Index of symbols: absolute derivative 12.3.2 $\mapsto$ 15.2.4

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