

**ERRATA for
Differential Geometry and Lie Groups for Physicists**

July 12, 2021

(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. 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: $3\times$ 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 \bullet 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), \ast^{-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 $3 \times$ 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: $A(C(e^a \otimes e_b)) \mapsto A(C(e^a \otimes e_b))$ (Carlos Guedes)
- p. 405 : in 15.5.8 (i): $R_{ijkl}^{ns} \mapsto R_{ijkl}^{\{nc\}}$; 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: $\text{constant} \cdot K(x) = 1/\rho^2 \mapsto \text{constant}$. Namely, $K(x) = 1/\rho^2$ (Carlos Guedes)
- p. 438 : in the solution to 16.2.4 (ii): $\dots = -\epsilon \oint_{\partial \mathcal{D}_3} j(t_0, \mathbf{r}) \cdot d\mathbf{S} \mapsto \dots = -\epsilon \oint_{\partial \mathcal{D}_3} \mathbf{j}(t_0, \mathbf{r}) \cdot d\mathbf{S}$ (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. 446 : in 16.3.8: Lorentz gauge \mapsto Lorenz gauge (Ludvig Lorenz rather than Hendrik Lorentz) (Erik Malm)
- 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): $\text{Ker } \pi_* \mapsto \text{Ker } \pi_{*e}$ (Dominik Rist)
- p. 569 : in the hint to (20.4.2) replace iv) \mapsto v) (Dominik Rist)
- p. 572 : hint to (20.4.6): 3 times $\rho'(\omega) \wedge \alpha$ (on arguments) \mapsto $(\rho'(\omega) \wedge \alpha)$ (on arguments)
(Hana Hluchá and Dominik Rist)
- p. 574 : after 20.4.10, $\omega_d^c \mapsto \omega_b^c$ (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), $\omega_a^c \Phi_{cb} + \omega_a^c \Phi_{cb} \mapsto \omega_a^c \Phi_{cb} + \omega_b^c \Phi_{ac}$ (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 : $\mathcal{A} \wedge \lambda \mapsto \mathcal{A} \wedge \lambda$ and $\mathcal{F} \wedge \lambda \mapsto \mathcal{F} \wedge \lambda$ 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 : $\mathbb{Z} \times \mathbb{Z} \mapsto \mathbb{Z} \times \mathbb{Z}$ (Peter Rapčan)
- p. 680 : near the bottom: see (6.1.6) \mapsto see (6.1.7) (Dominik Rist)
- p. 684 : add Lorenz Ludvig Valentin, 1829 Helingør - 1891 Frederiksberg (Erik Malm)
- 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) $M \rightarrow M$,
see the discussion just before 4.1.1
(Lars Dehlwes)
- p. 68 : in 4.1.11 i) inverse map is needed: $\Phi_t^* x^i \equiv x^i \circ \Phi_t \mapsto (\Phi_t^{-1})^* x^i \equiv x^i \circ \Phi_t^{-1}$
(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 $\epsilon \rightarrow 0 \dots A + \epsilon \mathcal{L}_V A + o(\epsilon)$
(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_b^a is” \mapsto “ Δ_b^a is (up to a sign)” (Δ_b^a 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. 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): $\text{sgn } g = 1$ also needed (in E^3 ok; in general on 3-dim M one has $\text{div} = *d *^{-1} b$)

(Dominik Rist)
- **p. 181** : (8.5.5) *i*): curl holds for $\text{sgn } g = 1$ (in E^3 ok; in general $\# *^{-1} db$ is there, $\text{curl} = \# * db$)

(Jonáš Dujava)
- **p. 188** : in 8.6.3 *iii*): $f(z)dz = \alpha + i * \alpha \mapsto f(z, \bar{z})dz = \alpha + i * \alpha$

(Jonáš Dujava)
- **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*) $\hat{V}_j^i = x_k^i \partial_j^k \equiv (x\partial)_j^i \mapsto \hat{V}_j^i = x_j^k \partial_k^i \equiv (\partial x)_j^i$

(Christophe Nozaradan)
- **p. 219** : in 11.1.10 *iv*) $\langle \alpha_j^i, V_l^k \rangle \mapsto \langle \hat{\alpha}_j^i, \hat{V}_l^k \rangle$

(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: $= x'_A \sigma_\nu A^+ = \mapsto = x^\nu A \sigma_\nu A^+ =$
(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. 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 $S_j^i(t)$)
- **p. 381** : in 15.2.11 (iii) the word *autonomous* is to be omitted (t is in $S_{\dots}(t)$)
- **p. 391** : 15.4.3 (i): $\nabla_{\dot{\gamma}} \dot{\gamma} = \sigma'' \dot{\gamma} \mapsto \nabla_{\dot{\gamma}} \dot{\gamma} = \sigma'' \dot{\gamma}$
(Samuel Hapák)
- **p. 391** : hint to 15.4.3 (i): $\nabla_{\dot{\gamma}} \dot{\gamma} = \sigma'(\sigma'' \dot{\gamma} + \sigma' \nabla_{\dot{\gamma}} \dot{\gamma}) \mapsto \nabla_{\dot{\gamma}} \dot{\gamma} = \sigma'' \dot{\gamma} + (\sigma')^2 \nabla_{\dot{\gamma}} \dot{\gamma}$
(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): $\nabla_V = \mathcal{L}_V + (\nabla V) \mapsto \nabla_V = \mathcal{L}_V + (\nabla V) + T(V, \cdot)$
(see more details in Additional material to the book)
- **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. 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. 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: $d(\mathbf{P} + \mathbf{a}) \cdot \wedge d\mathbf{R} \mapsto d\mathbf{P} \cdot \wedge d(\mathbf{R} + \mathbf{a})$
(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:
 $H_i \equiv \partial_i^b := \partial_i - \langle \hat{\omega}_b^a, \partial_i \rangle y_c^b \partial_a^c \equiv \partial_i - \langle \omega_b^a, \partial_i \rangle \xi_{E_b^a}$
 (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. 620** : (21.6.3) *i* resp. *iii*): $\phi^* \overset{\leftrightarrow}{\partial}_0 \phi \mapsto \phi^* \overset{\leftrightarrow}{\partial}_0 \phi dV$ resp. $\phi^* \overset{\leftrightarrow}{\mathcal{D}}_0 \phi \mapsto \phi^* \overset{\leftrightarrow}{\mathcal{D}}_0 \phi dV$
- **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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