

Errata

of the book

SPECIAL RELATIVITY

IN GENERAL FRAMES

<https://relativite.obspm.fr/sperel/>

12 January 2021

- p. 88, the right-hand side of Eq. (3.57) has the wrong sign ; this equation should read

$$\underline{\Omega}_{\text{FW}} = ca(\underline{e}_0 \otimes \underline{e}_1 - \underline{e}_1 \otimes \underline{e}_0)$$

- p. 111, in the title of Sec. 4.5.2, replace *Secondw* by *Second*.
- p. 113, first line below Eq. (4.53) : replace *The last two terms* by *The first two terms*.
- p. 113, first line below Eq. (4.55) : replace *and the term* $2\vec{\omega} \times_u \vec{V}$ by *and minus the term* $2\vec{\omega} \times_u \vec{V}$.
- p. 210, last line : replace $-V_2 \sin \theta \vec{e}_2$ by $V_2 \sin \theta \vec{e}_2$.
- p. 214, first line above Eq. (6.117) : a factor 2 is missing in the right-hand of the inline equation ; it should read $1 + \cosh \psi = 2 \cosh^2(\psi/2)$.
- p. 218, footnote 3 : change the end of the first sentence to *of open sets such that any open set can be written as the (possibly infinite) union of some members of this family*.
- p. 235, the middle equation in the system (7.44) has a spurious minus sign in its right-hand side ; this equation should read

$$[\mathbf{K}_i, \mathbf{J}_j] = \sum_{k=1}^3 \epsilon_{ijk} \mathbf{K}_k$$

- p. 236, all the equations in the second and third lines of the system (7.45) have a spurious minus sign in their right-hand sides ; these equations should read

$$\begin{aligned} [\mathbf{K}_1, \mathbf{J}_2] &= \mathbf{K}_3, & [\mathbf{K}_2, \mathbf{J}_3] &= \mathbf{K}_1, & [\mathbf{K}_3, \mathbf{J}_1] &= \mathbf{K}_2 \\ [\mathbf{J}_1, \mathbf{K}_2] &= \mathbf{K}_3, & [\mathbf{J}_2, \mathbf{K}_3] &= \mathbf{K}_1, & [\mathbf{J}_3, \mathbf{K}_1] &= \mathbf{K}_2 \end{aligned}$$

- p. 236, in the two lines above Eq. (7.46), the parts $= -\mathbf{K}_2$ and $= \mathbf{K}_1$ must be changed to respectively $= \mathbf{K}_2$ and $= -\mathbf{K}_1$, so that these two lines becomes

Since from (7.45), $[\mathbf{K}_1, \mathbf{K}_2] = -\mathbf{J}_3$, $[\mathbf{K}_1, [\mathbf{K}_1, \mathbf{K}_2]] = -[\mathbf{K}_1, \mathbf{J}_3] = \mathbf{K}_2$ and $[\mathbf{K}_2, [\mathbf{K}_1, \mathbf{K}_2]] = -[\mathbf{K}_2, \mathbf{J}_3] = -\mathbf{K}_1$, (7.41) leads to.

- p. 236, the signs in front of the $1/12$ terms in Eq. (7.46) are wrong ; this equation should read

$$\Lambda_1 \circ \Lambda_2 = \exp \left(\psi_1 \mathbf{K}_1 + \psi_2 \mathbf{K}_2 - \frac{1}{2} \psi_1 \psi_2 \mathbf{J}_3 + \frac{1}{12} \psi_1^2 \psi_2 \mathbf{K}_2 + \frac{1}{12} \psi_1 \psi_2^2 \mathbf{K}_1 + \dots \right)$$

- p. 251, footnote 12 : replace *same letters than* by *same letters as*.
- p. 296, Eq. (9.59) : \vec{e}_x must be replaced by \underline{e}_x , so that the equation should read

$$\mathbf{p}_1 = \frac{E_1}{c} \underline{\mathbf{u}}_0 + P_1 \underline{e}_x \quad \text{and} \quad \mathbf{p}_2 = m_2 c \underline{\mathbf{u}}_0$$

- p. 300, last line of Remark 9.14 : replace “*bounces*” onto by “*bounces*” off.
- p. 338, fifth line above Eq. (10.62), insert *line* after *straight*.
- p. 340, second line of Sec. 10.6.2 : replace *measured by to an* by *measured by an*.
- p. 345, first line below Eq. (10.78) : replace *two vectors de* by *two vectors of*.
- p. 376, end of Sec. 11.5.1.1 : replace the last sentence by *Note that both sheets of the null cone, past and future, contribute to the action*.
- p. 376, fourth line below Eq. (11.101) : replace *propagates thus* by *thus propagates*.
- p. 385, second line below Eq. (12.13) : replace *in the proper time* by *is the proper time*.
- p. 435, first line below Eq. (13.23) : replace *has not exactly* by *does not have exactly*.
- p. 445, last line of footnote 4 : replace *not less* by *no less*.
- p. 446, 6th line above Eq. (13.49) : replace *Even, we shall use* by *We shall even use*.
- p. 446, last but one line : replace $\vec{\mathbf{u}} \cdot d\vec{\mathbf{V}} = 0$ by $\vec{\mathbf{u}} \cdot \vec{\mathbf{V}} = 0$.
- p. 465, third line below Eq. (13.103b) : replace *the same than that at the emission by the same as the one during the emission*
- p. 467, unnumbered equation above Eq. (13.108) : the expression of v_- should be $c + r\omega$, so that the whole equation becomes

$$v_+ = c - r\omega \quad \text{and} \quad v_- = c + r\omega \quad (\text{aether})$$

- p. 467, last but one line : replace *This is thus Georges Sagnac* by *It is thus Georges Sagnac*.
- p. 495, third line above Eq. (15.1) : replace *pure mathematical* by *purely mathematical*.
- p. 498, third line of Remark 15.1 : replace *We had not to use* by *We did not have to use*.
- p. 521, Eq. (16.1) : replace the wedge product by a cross product, so that the equation becomes :

$$dV = d\vec{\ell}_1 \cdot (d\vec{\ell}_2 \times d\vec{\ell}_3).$$

- p. 724, first line of legend of Fig. 22.3 : replace *on a polar orbit* by *in a polar orbit*.
- p. 724, second line of Sec 22.3.2 : replace *leads to abandon* by *leads to the abandoning of*
- p. 725, 6th line below Eq. (22.30) : replace *leads to abandon* by *leads to the abandoning of*