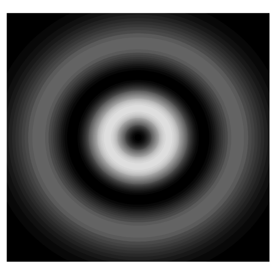
ERRATA

1. Page 40, Line after Eq. (3.64): the correct argument of the tangent is $\tilde{\theta}(0)/4$
2. Page 48, Eq. (4.36): δ must be converted into Δ
3. Pages 75, 76, 79, and 82: in Eqs. (7.4), (7.9), (7.12), (7.14), (7.31-33), and (7.43-45), 32 must be corrected into 8
4. Page 82, in Eqs. (7.48,49) and (7.51,52), 16 must be corrected into 4
5. Page 143, in Eq. (13.30) one must write $|\Delta| \to \infty$, $|\theta| \to \infty$
6. Page 153, in Eqs. (14.24,25) one must erase the square bracket. As a consequence, also Eqs. (14.27) in the next page must be corrected
7. Page 154, in Eq. (14.31) τ must be corrected into t
8. Page 179, line 7: the gap energies for Si and Ge are exchanged.
9. Page 235, in Eq. (20.12) $\tilde{p}_n$ must be corrected into $\delta\tilde{p}_n$
10. Page 236, in Eq. (20.18) $i\Delta$ must be corrected into $-i\Delta$
11. Page 237, line 9 from bottom: 22 must be corrected into 23
12. Page 238, in Eqs. (20.27,28), $\tilde{\kappa}$ must be corrected into κ
13. Pages 248,249: Section 21.2 is erroneous from Eq. (21.11) to the end. It must be replaced by Sec. 4 of the article L.A. Lugiato and F. Prati, *Traveling wave formalism for the dynamics of optical systems in nonlinear Fabry-Perot cavities*, Physica Scripta **93**, 124001 (2018)
14. Page 331: in Fig. 26.3 the figure of the Gauss-Laguerre modes $(1, \pm 1)$ must be replaced by the following



15. Page 366: in Fig. 28.1 parts (c) and (d) correspond to $\theta = 2$ and in part (e) the upper branch must not be broken line

IMPORTANT REMARKS

1. In the book we use the symbol A for two things:
   – The Einstein spontaneous emission rate (1.19)
   – The pump parameter (9.12)

2. We have recently formulated a travelling wave formalism for the Fabry-Perot cavity by considering a doubled cavity. This formalism is powerful and, in the case of nonlinear optical systems, it allows to reduce the numerical load by orders of magnitude in comparison with the standard standing wave formalism. This theory has been published in the review article L.A. Lugiato and F. Prati, *"Fabry-Perot cavities made easy"*, Progress in Optics **68**, ch. 6, pp. 329-380 North-Holland, Amsterdam 2023, where the papers treating the topic of the review are indicated. One of those papers includes, in particular, the stability analysis of the nontrivial stationary solution showing that in Fabry-Perot lasers the multimode instability can arise near threshold in striking difference from ring lasers. We strongly suggest the reader to complement Chapter 14 with this article.

3. In Eqs. (20.27,28) τ can be replaced by t. As a matter of fact, let us start from Eq. (12.1): we have that

   $$\frac{z}{L}\Delta t = \frac{z}{L}\frac{\mathcal{L}-L}{c}\frac{\mathcal{L}}{\mathcal{L}} < \frac{\mathcal{L}}{c} = \frac{\mathcal{L}}{c}\frac{T}{T} \ll \kappa^{-1}$$

   being $\kappa = cT/\mathcal{L}$ and $T \ll 1$. Since for $\kappa \ll \gamma_\perp, \gamma_\parallel$, the electric field evolves on the time scale of κ^{-1}, the term $(z/L)\Delta t$ is negligible in Eq. (12.1).

4. In the last fifteen years there has been the development of a major topic designated as "Kerr frequency combs" that has already led to very relevant applications. This topic is intrinsically connected with the Lugiato-Lefever Equation (LLE), discussed in Chapter 28, which is the very model that describes Kerr frequency combs in all details and governs their features. In the book, Kerr frequency combs are only briefly mentioned at the end of Chapter 28, where Ref. 374 is indicated as the article that first disclosed experimentally Kerr frequency combs. In this connection, we advise the reader to consult the articles F. Castelli, M. Brambilla, A. Gatti, F. Prati, and L.A. Lugiato, *The LLE, pattern formation and a novel coherent source*, Eur. Phys. J. D **71**, 84 (2017), and L.A. Lugiato, F. Prati, M. Gorodetsky, and T. Kippenberg, *From the LLE to microresonator-based Kerr frequency combs*, Phil. Trans. Roy. Soc. A **376**, 20180113 (2018). Furthermore, a generalized LLE has been recently formulated in L. Columbo, M. Piccardo, F. Prati, L.A. Lugiato, M. Brambilla, A. Gatti, N. Opacak, M.B. Schwartz, and F. Capasso, *Unifying frequency combs in active and passive cavities: temporal solitons in externally driven ring lasers*, Phys. Rev. Lett. **126**, 173903 (2021), that holds also in lasers as opposed to the original LLE formulated for passive systems only. This

equation, in particular, describes very well ring quantum cascade lasers (an especially important class of lasers) near threshold.