Erratum to: Third-order dispersion role on parabolic pulse propagation in dispersion-decreasing fiber with normal group-velocity dispersion

S. Zhang · G. Zhao · A. Luo · Z. Zhang

Published online: 27 April 2010
© Springer-Verlag 2010

Erratum to: Appl Phys B (2009) 94: 227–232
DOI 10.1007/s00340-008-3314-x

Unfortunately, several errors have occurred in our paper published recently.

The correct values are as follows.

- The following values should be used throughout the article:

$$b = \frac{\beta_3 \Gamma_0^2}{54\beta_2^3}, \quad m = -\frac{2\beta_3 \Gamma_0}{9\beta_2^2}, \quad n = -\frac{\beta_3^2 \Gamma_0^2}{36\beta_2^4},$$

$$q = -\frac{\beta_3^4 \Gamma_0^4}{1944\beta_2^8},$$

$$\varphi = \varphi_0 + \frac{\beta_3^2 \Gamma_0^2 \xi}{54\beta_2^3} + \frac{3\gamma A_0^2}{2\Gamma_0} \exp\left(\frac{2}{3}\Gamma_0 \xi\right),$$

$$\phi = -\frac{\Gamma_0}{6\beta_2} T^2 + \frac{\beta_3 \Gamma_0^2}{54\beta_2^3} T^3 + \varphi_0 + \frac{\beta_3^2 \Gamma_0^2 \xi}{54\beta_2^3} + \frac{3\gamma A_0^2}{2\Gamma_0} \exp\left(\frac{2}{3}\Gamma_0 \xi\right),$$

$$\delta\omega = -\frac{\partial\phi}{\partial T} = \frac{\Gamma_0}{3\beta_2} T - \frac{\beta_3 \Gamma_0^2}{18\beta_2^3} T^2,$$

$$\beta_3 = 6.05 \times 10^{-3} \text{ ps}^3/\text{km}, \quad \gamma = 3.33 (\text{W} \cdot \text{km})^{-1}, \\ W_{\text{in}} = 32.3 \text{ pJ}, \quad \beta_{22} = -0.4485 \text{ ps}^2/\text{km}.$$

- The following values should be used in Sect. 4.1 and in Fig. 3:

$$\beta_{32} = -2.1 \times 10^{-3} \text{ ps}^3/\text{km}, \quad T_{\text{FWHM}} = 97.7 \text{ fs}, \\ P_{\text{peck}} = 4283 \text{ W}, \quad T_{\text{FWHM}}/T_{\text{comp}} = 40.98.$$

- The following values should be used in Sect. 4.2:

$$T_{\text{FWHM}}/T_{\text{comp}} = 39.06, \quad P_{\text{peck}} = 4280 \text{ W}.$$

- The following value should be used in Sect. 4.3 and in Fig. 5:

$$\beta_{32} = -3.5 \times 10^{-3} \text{ ps}^3/\text{km}.$$

The correct version of the figures is as follows.

The online version of the original article can be found under doi:10.1007/s00340-008-3314-x.

S. Zhang (✉) · G. Zhao · Z. Zhang
College of Physics Science and Information Engineering, Hebei
Advanced Thin Films Laboratory, Hebei Normal University,
Shijiazhuang 050016, China
e-mail: zhangsm_sd@126.com
Fax: +86-311-86268314

A. Luo
Laboratory of Photonic Information Technology, School of
Information and Optoelectronic Science and Engineering, South
China Normal University, Guangzhou 510006, China

Fig. 1 The frequency chirp for the case when TOD is ignored (solid line) and is not ignored ($\beta_3 = 6.05 \times 10^{-3} \text{ ps}^3/\text{km}$, dotted line)

a

b

Fig. 2 (a) The theoretically calculated self-similar pulse shapes when TOD is included ($\beta_3 = 6.05 \times 10^{-3} \text{ ps}^3/\text{km}$, solid line) and when the effect of the TOD is not included (dotted line). (b) The corresponding simulation waveforms of the output pulses after propagation over $2L_d = 0.576 \text{ km}$

Fig. 3 The evolution of the asymmetric pulse (solid line in Fig. 2(b)) in a dispersion compensation fiber with the full TOD compensation for which the GVD and the TOD are $\beta_{22} = -0.4485 \text{ ps}^2/\text{km}$ and $\beta_{32} = -2.1 \times 10^{-3} \text{ ps}^3/\text{km}$, respectively

Fig. 4 The evolution of the self-similarity pulse (dotted line in Fig. 2(b)) in a dispersion compensation fiber when TOD is ignored. The GVD and the TOD of the compensation fiber are $\beta_{22} = -0.4485 \text{ ps}^2/\text{km}$ and $\beta_{32} = 0$, respectively

Fig. 5 The evolution of the asymmetric pulse (solid line in Fig. 2(b)) in a dispersion compensation fiber with partially compensated of TOD $\beta_{32} = -3.5 \times 10^{-3} \text{ ps}^3/\text{km}$

Fig. 6 Waveforms of the compressed pulses when TOD is ignored (*dashed line*), with the full TOD compensation (*solid line*), and with the partial TOD compensation (*dotted line*)