Errata for
An Introduction to Contact Topology
by Hansjörg Geiges
Cambridge University Press (2008)

Here is a list of corrections to misprints or errors in the book. If you find further misprints or errors, please send an e-mail to `geiges@math.uni-koeln.de`.

H.G., 13 October 2010

> 'O glücklich! wer noch hoffen kann
> Aus diesem Meer des Irrtums aufzutauchen.
> Was man nicht weiß das eben brauchte man,
> Und was man weiß kann man nicht brauchen.'
>
> Johann Wolfgang von Goethe
> *Faust. Der Tragödie erster Teil*

p. 32	Replace $\gamma(t)$ by $\dot{\gamma}(t)$ in the last line of Corollary 1.5.6.
p. 72	Replace $J^1(S^1)$ by $J^1(L)$ in the third paragraph of Example 2.5.11.
p. 91	Insert 'contact' before 'isotopy' in the last line of Theorem 2.6.13.
p. 99	The first sentence in the proof of Lemma 3.2.6 should read 'The Legendrian condition $z' + xy' = 0$ implies...'
p. 104, l. -4	Replace 'third' by 'fourth'.
p. 119, l. 7	Z should be $\mathbb{Z}$.
p. 120	In Corollary 3.5.16, the condition '$e(\xi) = 0$' should be replaced by '$e(\xi) \in H^2(M)$ a torsion class'.
p. 211, l. -1	superfluous 'the'
p. 217	The triangle inequality for angles used implicitly in the estimate in l. 2 is only valid when at least one of σ and σ' is a 2-simplex. Thus, the estimate cannot be used to prove the claim (already contained in Eliashberg's original proof) that special 1-simplices are isolated. Indeed, suppose σ, σ' are two 1-simplices with a common vertex p, but such that σ, σ' do not belong to the same 2-simplex. Furthermore, suppose that for some $t \in [0, 1]$, the plane $\xi_t(p)$ is equal to (or near) the plane spanned by σ and σ'. Then σ, σ' constitute a pair of non-isolated special 1-simplices. Fortunately, this does not affect the overall structure of the argument too much. The only change necessary is that for a special 1-simplex σ the auxiliary foliation $\mathfrak{P}_\sigma$ should be taken to be the foliation by planes orthogonal to σ. The fact that σ is special guarantees that the transversality condition ($\mathfrak{P}$1) will be satisfied.

Since the perturbation of the plane field ξ_t into a contact structure in the neighbourhood of a special 1-simplex is now along leaves of a 1-dimensional foliation $\mathfrak{p}_{\xi_t}$ contained in planes orthogonal to σ, no potential problem with boundary conditions (as discussed under (2) on p. 218 for the non-special 1-simplices) occurs.

I thank Hélène Eynard-Bontemps for drawing my attention to the fact that special 1-simplices need not be isolated, and for suggesting the described simple way around this problem.

p. 289, l. -6	$D^{k+1} \times D^{n-k-1}$ should be replaced by $D^{k+1} \times D^{n-k}$.
p. 366	This should be Theorem 8.0.1, of course, not 8.0.6. The faulty numbering was caused by a LaTeX bug. Since all cross-references are likewise to 8.0.6, this should cause no confusion.
p. 368	In Proposition 8.1.1, the assumption that M be *simply connected* is essential. The proof then goes through as given; on p. 371 the argument simplifies a little, because $M^{(2)}$ is now a wedge of 2-spheres. If M is not simply connected, then c_1 and the obstruction d^2 to homotopy over the 2-skeleton are related as in Remark 4.3.4, so in the presence of 2-torsion in $H^2(M)$ the first Chern class does not detect all homotopy classes of almost contact structures. One way to arrive at the analogue of Remark 4.3.4 in this context is to observe — from the homotopy exact sequence of the fibration $\mathbb{C}P^3 \rightarrow \mathrm{BU}(2) \rightarrow \mathrm{BSO}(5)$ — that the inclusion $\mathbb{C}P^3 \rightarrow \mathrm{BU}(2)$ induces multiplication by 2 on π_2. See [1, Section 2] for an idea how to formulate the general classification result. Less as an excuse than as a word of warning: this error is not new, see [4, Thm. 9] and [2, p. 170]. I was alerted to this error by the careful discussion in [3].
Author Index	Subtract i from all references to roman page numbers (except the one to Schopenhauer).
p. 432, 2nd column, l. 15	'exists', not 'exits'

References

[1] F. Ding, H. Geiges and A. I. Stipsicz, Surgery diagrams for contact 3-manifolds, *Turkish J. Math.* **28** (2004), 41–74.

[2] Ya. Eliashberg, Contact 3-manifolds twenty years since J. Martinet's work, *Ann. Inst. Fourier (Grenoble)* **42** (1992), 165–192.

[3] M. Hamilton, On symplectic 4-manifolds and contact 5-manifolds, Ph.D. thesis, LMU München (2008).

[4] C. T. C. Wall, Classification problems in differential topology V — On certain 6-manifolds, *Invent. Math.* **1** (1966), 355–374.