

Known Typographical Errors in the First Edition, Second Printing of Turbulence Modeling for CFD by D. C. Wilcox

These are all of the known typographical errors as of March 16, 2009.

1. Page 26, next to last paragraph: Replace “ $0.499v_{th}\ell_{mfp}$ ” by “ $0.499\rho v_{th}\ell_{mfp}$ ”.
2. Page 34, paragraph 2, line 2: Replace “dependent variables” by “independent variables”.
3. Page 42, Equation (3.88): Replace “ y ” by “ η ”.
4. Page 42, Equation (3.89): The limiting value of the function is missing and “ y ” should be replaced by “ η ”. The correct equation is

$$\frac{d}{d\eta} \left[\frac{1}{\eta^j} \frac{dF}{d\eta} \right] \eta \rightarrow 0 \quad \text{as} \quad \eta \rightarrow 0$$

5. Page 107, Equation (4.92): Replace “ Re_{δ^*} ” by “ $u_\tau \delta^* / \nu$ ”.
6. Page 107, just above Equation (4.94): Replace “ $Re_{\delta^*} \gg 1$ ” by “ $u_\tau \delta^* / \nu \gg 1$ ”.
7. Page 107, Equation (4.94): Replace “ Re_{δ^*} ” by “ $u_\tau \delta^* / \nu$ ”.
8. Page 140, Equation (4.186): The value for $C_{\epsilon 1}$ should be 1.55, rather than 1.45.
9. Page 147, Equation (4.196): ρ should not appear in the equation – it should be as follows.

$$U \frac{\partial U}{\partial x} + V \frac{\partial U}{\partial y} = \frac{\partial}{\partial y} \left[(\nu + \nu_T) \frac{\partial U}{\partial y} \right]$$

10. Page 147, Equation (4.198): Replace “ μ_T ” by “ ν_T ”.
11. Page 147, Equation (4.201): Replace “ μ_T ” by “ ν_T ”.
12. Page 173, Equation (5.4): Preceding the integral,

$$\frac{1}{\bar{\rho}} \lim_{T \rightarrow \infty} \quad \text{should be replaced by} \quad \frac{1}{\bar{\rho}} \lim_{T \rightarrow \infty} \frac{1}{T}$$

13. Page 186, second paragraph, fourth line: Replace “nearly identical” by “similar”.
14. Page 189, Table 5.1: All Mach numbers should be multiplied by $\sqrt{2}$. The correct table is as follows.

M_∞	Boundary Layer		Mixing Layer	
	$\xi^* = 0$	$\xi^* = 1$	$\xi^* = 0$	$\xi^* = 1$
0	0	0	0	0
1	0.086	0.086	0.255	0.225
2	0.161	0.151	0.437	0.321
3	0.211	0.191	0.543	0.346
4	0.246	0.218	0.600	0.359
5	0.270	0.242	0.641	0.376

15. Page 201, paragraph just below Equation (5.110), tenth line: Replace “1.86” by “-1.36”.
16. Page 257, last line on page: Replace “all four of the high-amplitude cases” by “four of the high-amplitude cases”.
17. Page 285, sentence just below Equation (7.52): Replace “subject the following” by “subject to the following”.
18. Page 285, Equation (7.55): Replace “ $y - \delta$ ” by “ $\delta - y$ ”.
19. Page 286, last two paragraphs: The names Neumann and Dirichlet are inverted throughout. The last two sentences of the next to last paragraph should read as follows.

“That is, specified values at the edge are of the Dirichlet type while zero-gradient conditions are of the Neumann type. Almost universally, convergence of iterative schemes is much slower with Neumann conditions than with Dirichlet conditions.”

Also, in the last paragraph, the next to last sentence should read:
“Once k_e and ω_e are determined from Equations (7.56) and (7.57), it is then possible to specify Dirichlet-type boundary conditions that guarantee zero normal gradients. ”
20. Page 294, second paragraph, second line: the reference, “Lilley (1965)”, should be “Lilly (1965)”.
21. Page 340, Equation (B.15): The exact solution is

$$F(s; \delta) = \frac{e^{\alpha(1-s)} - e^{\alpha-\beta s/\delta}}{1 - e^{\alpha-\beta/\delta}}$$

where

$$\alpha = \frac{1 - \sqrt{1 - 4\delta}}{2\delta} \quad \text{and} \quad \beta = \frac{1 + \sqrt{1 - 4\delta}}{2}$$

22. Page 427, Equation (D.33): The value for $C_{\epsilon 1}$ should be 1.55, rather than 1.45.