V. Wünsch, Erratum to: "Some new conformal covariants" [Z. Anal. Anwendungen 19 (2000), no. 2, 339-357]

Zeitschrift für Analysis und ihre Anwendungen Journal for Analysis and its Applications

Volume 21 (2002), No. 2, 529–530

DOI 10.4171/ZAA/1093

The following corrections should be made to the above mentioned paper:

1. On p. 350, Theorem 5.2, line 3 of the operator $D_{(4,p)}^s$ should be replaced by

$$+\overset{c}{\nabla}_{u}C^{u\,a\,b}_{\dots \,i_{1}}\{a_{6}\overset{c}{\nabla}_{a}u_{bi_{2}\dots i_{n}}+a_{7}\overset{c}{\nabla}_{b}u_{ai_{2}\dots i_{n}}+a_{8}\overset{c}{\nabla}_{i_{2}}u_{abi_{3}\dots i_{n}}\}.$$

2. On p. 354, Theorem 6.1, line 4 of the operator $D_{(2,p)}^*$ should be replaced by

$$+c_3\left(\overset{c}{\nabla}_u C^u_{\alpha_1 \alpha_1} \overset{ab}{\nabla}_{\alpha_2} u_{ab\alpha_3...\alpha_p} + \overset{c}{\nabla}_u C^{ua}_{\alpha_1 \alpha_2} \overset{c}{\nabla}^k u_{ka\alpha_3...\alpha_p}\right).$$

- 3. On p. 356, line 24: Mclenagan should be replaced by McLenaghan.
- 4. The referee of the paper for "Mathematical Reviews" observed that the meaning of the expression "leading term" in Theorem 6.2 is not quite clear. The author take this to mean that there is a term \Box 2 with non-zero coefficient and all other terms are of lower order. In this meaning Theorem 6.2 is correct. On the other side, if we consider general fourth-order operators on \wedge^2 , then the following theorem holds:

Theorem 6.3. If n = 4, the operator $\overset{a}{D}_{4,2}$ defined on \wedge^2 by

$$\begin{split} \overset{a}{D}_{4,2}[u]_{\alpha_{1}\alpha_{2}} &= \overset{c}{\Box} \overset{c}{(d\delta - \overset{c}{\delta d})} u_{\alpha_{1}\alpha_{2}} - 2 \overset{c}{(d\delta - \overset{c}{\delta d})} [C_{\alpha_{1}\alpha_{2}} \overset{ab}{\dots} u_{ab}] \\ &+ C_{\alpha_{1}\alpha_{2}} \overset{ab}{\dots} \overset{c}{\Box} u_{ab} - 4 C_{\alpha_{1}} \overset{kab}{\nabla} \overset{c}{\nabla} (_{k} \overset{c}{\nabla} _{\alpha_{2}}) u_{ab} \end{split}$$

is a fourth-order conformal covariant on \wedge^2 with $\omega = -2$ and $\omega_0 = 1$.

The proof of Theorem 6.3 is analogous to that of [40: p. 279/Proposition 3.5] and of Theorems 5.2 and 5.3.

Remark 6.2. The spinor equivalent of (5.4) is

$$\varepsilon_{A_1 A_2} \overline{S}_{\dot{A}_1 \dot{A}_2} + \varepsilon_{\dot{A}_1 \dot{A}_2} S_{A_1 A_2}$$

where

$$\overline{S}_{\dot{A}_{1}\dot{A}_{2}} = 2 \stackrel{c}{\Box} \stackrel{c}{\nabla^{E}}_{\dot{A}_{1}} \stackrel{c}{\nabla^{F}}_{\dot{A}_{2}} u_{EF}
- 8 \stackrel{c}{\nabla^{E}}_{\dot{A}_{1}} \stackrel{c}{\nabla^{F}}_{\dot{A}_{2}} [\psi_{EF}^{AB} u_{AB}]
+ 4 \psi_{EF}^{AB} \stackrel{c}{\nabla^{E}}_{\dot{A}_{1}} \stackrel{c}{\nabla^{F}}_{\dot{A}_{2}} u_{AB}$$

and

$$u_{\alpha_1\alpha_2} \leftrightarrow \varepsilon_{A_1A_2} \overline{u}_{\dot{A}_1\dot{A}_2} + \varepsilon_{\dot{A}_1\dot{A}_2} u_{A_1A_2}$$

[see [16] and the paper "On Conformal Invariants Built from Spinor Fields" by R. Gerlach and V. Wünsch in Math. Nachr. 223 (2001), 49 – 64]. To prove the property of (5.5) to be conformal covariant is much easier than that one of (5.4).

ISSN 0232-2064 / \$ 2.50 © Heldermann Verlag Berlin

530 V. Wünsch

Acknowledgement. The author is very grateful to M. Eastwood and R. Gover for various suggestions and observations.

Received 21.03.2002