Correction to: Cartan invariants and event horizon detection

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Correction to: Gen Relativ Gravit (2018) 50:37

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The following sentences at the end of section 2:

“There is a fundamental difficulty with applying the alignment classification, as it may depend on solving degree five polynomials to determine the WANDs. The solutions to these polynomials may not be expressible in terms of algebraic functions, and instead require transcendental functions, which are often too complex to implement in practice. Thus, unlike the case in 4D, the ability to explicitly determine the WANDs is not guaranteed.”

should be replaced by:

The original article can be found online at <https://doi.org/10.1007/s10714-018-2358-4>.

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“There is a fundamental difficulty with applying the alignment classification, as it may depend on solving degree four multivariate polynomials, with more than two variables, to determine the WANDs. The exact solutions to such polynomial equations are difficult to compute. Thus, unlike the case in 4D, the ability to determine the WANDs in dimension higher than four is not always feasible in practice.”

Equations (4.1.6)–(4.1.8) were mistranscribed from the computer calculations, leading to some incorrect coefficients. The corrected equations are:

$$R_{01;1} = -4R_{1i;i} = -2R_{jj;1} = \frac{8Q^2}{8Mr^2 - 15Q^2},$$

$$R_{01;0} = -4R_{0i;i} = -2R_{jj;0} = -\frac{36(8Mr^2 - 15Q^2)f(r)Q^2}{r^{14}} \quad (4.1.6)$$

$$C_{0101;1} = 3C_{0i1i;1} = -3C_{ijij;1} = 1, \quad (4.1.7)$$

$$C_{0101;0} = 3C_{0i1i;0} = -3C_{ijij;0} = -\frac{9(8Mr^2 - 15Q^2)^2 f(r)}{2r^{14}}. \quad (4.1.8)$$

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