

ERRATUM TO OPTIMAL INEQUALITIES FOR EMBEDDED SPACE-TIMES

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1. ERRATUM

Because of the fact that the existence at a point of a semi-Riemannian manifold of an infimum (or supremum) of the sectional curvature of non-degenerate planes implies that all sectional curvatures are constant at this point [2], Definition 1 of [1] has to be replaced by the following.

Definition 1.1. For a given set of mutually orthogonal plane sections $\{L_j\}$ with dimensions (n_1, \dots, n_k) such that $n_1 + \dots + n_k \leq m$, the amended scalar curvature $\Lambda(n_1, \dots, n_k)$ in the semi-Riemannian case is given by

$$\Lambda(n_1, \dots, n_k) = \tau - \{\sigma(L_1) + \dots + \sigma(L_k) \mid L_j \text{ a non-null plane section, } L_i \perp L_j\}.$$

With this new definition, Theorem 1 of [1] has to be replaced by the following.

Theorem 1.1. *Let a m -dimensional Riemannian or Lorentzian manifold (\mathcal{M}, g) be locally and isometrically embedded in a $(m + 1)$ -dimensional semi-Riemannian manifold (\mathcal{N}, \tilde{g}) with diagonalisable Ricci tensor \tilde{S} (i.e., there exists an orthonormal basis $\{\tilde{e}_a\}$ of \mathcal{N} such that $\tilde{S} = \sum_{a=1}^{m+1} \lambda_a \tilde{e}_a \otimes \tilde{e}_a$). Then, for every $k \geq 0$ and every set (n_1, \dots, n_k) such that $n_1 < m$ and $n_1 + \dots + n_k \leq m$, we have*

$$\|H\|^2 \geq c(n_1, \dots, n_k) \Lambda(n_1, \dots, n_k) - \frac{1}{2} c(n_1, \dots, n_k) \left\{ \sum_{\alpha=1}^m \varepsilon_\alpha \lambda_\alpha - \lambda_{m+1} \right\},$$

if $(\text{sign } \mathcal{N}) = (s_{\mathcal{M}} + 1, t_{\mathcal{M}})$, and

$$\|H\|^2 \leq c(n_1, \dots, n_k) \Lambda(n_1, \dots, n_k) - \frac{1}{2} c(n_1, \dots, n_k) \left\{ \sum_{\alpha=1}^m \varepsilon_\alpha \lambda_\alpha + \lambda_{m+1} \right\},$$

if $(\text{sign } \mathcal{N}) = (s_{\mathcal{M}}, t_{\mathcal{M}} + 1)$.

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Essentially this formulation of Theorem 1 is what actually was proven in [1] and accordingly the further part of [1] still holds well.

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REFERENCES

- [1] S. Haesen, *Optimal inequalities for embedded space-times*, Kragujevac J. Math. **28** (2005), 69–85.
- [2] R. S. Kulkarni, *The values of sectional curvatures in indefinite metrics*, Comment. Math. Helvetici **54** (1979), 173–176.

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