IMPORTANT NOTE ON NOTATION

In this chapter I have been careful to distinguish between internal and external tangent tensors. In future chapters I am much more sloppy about this distinction. For instance, in this chapter I have denoted the soldering isomorphism by $\sigma$ and its inverse by $\sigma^{-1}$. In later chapters I denote the soldering isomorphism by $\varepsilon$ and its inverse by $\theta$, to conform with more standard notation. Then under the isomorphism $\varepsilon$, the image of an admissible frame on an $O_e(3,1,R)$ - internal tangent bundle is the orthonormal frame $e_{\alpha} = e_{\alpha}^{a} e_{a}$ on the external tangent bundle.

The one highly nonstandard notation that I retain is

$$\nabla_{c} e_{\beta}^{a} = \beta e_{\beta}^{a} + \{a_{bc}\} e_{\beta}^{b} - \Gamma_{\beta c}^{a} e_{a}$$

$$= e_{\beta}^{b} (\{a_{bc}\} - \Gamma_{\beta c}^{a})$$

$$= e_{\alpha}^{a} (\{a_{bc}\} - \Gamma_{\beta c}^{a})$$

$$= - \lambda_{\beta c}^{a}, \quad (84)$$

rather than the usual

$$\nabla_{c} e_{\beta}^{a} = (\nabla_{c} e_{\beta})^{a} = \{a_{\beta c}\} e_{a}^{a}, \quad (85)$$

which I would denote as $(\nabla_{c} e_{\beta})^{a}$ except that I never use it. (Note that (85) has a Christoffel connection because $e_{\beta}$ is a basis vector on the external bundle.)