$$g^{ik}\left[\Gamma^{s}_{ik,s} - \tfrac{1}{2}(\Gamma^{s}_{is,k} + \Gamma^{s}_{sk,i}) - \Gamma^{a}_{is}\Gamma^{b}_{ak} + \Gamma^{a}_{ik}\Gamma^{b}_{as}\right]$$

$$-g^{ik}{}_{;l} + \tfrac{1}{2}\delta^{i}_{l}\,g^{sk}{}_{;s} + \tfrac{1}{2}\delta^{k}_{l}\,g^{is}{}_{;s} \quad \Big| -\tfrac{1}{2}g^{tk}\Gamma^{s}_{ts}\delta^{i}_{l} + \tfrac{1}{2}g^{it}\Gamma^{s}_{ts}\delta^{k}_{l}$$

$$+g^{tk}\Gamma^{s}_{ts} - g^{tk}\Gamma^{s}_{ts}$$

$$\tfrac{1}{2}\,|\,g^{tk}\Gamma^{s}_{ts}$$

Diese Γ nun Γ^{x} genannt. $\quad \Gamma^{xl}_{ik} + \frac{1}{3}(\delta^{l}_{i}\Gamma^{xs}_{ks} - \delta^{l}_{k}\Gamma^{xs}_{is}) = \Gamma^{l}_{ik}$

$$\Gamma^{xs}_{is} + \tfrac{1}{3}\Gamma^{s}_{is} - \tfrac{4}{3}\Gamma^{s}_{is} = \Gamma^{l}_{il} = 0$$

Setzen $\Gamma^{lx}_{ik} = \Gamma^{l}_{ik} + \frac{1}{3}(\Gamma^{sx}_{is}\delta^{l}_{k} - \Gamma^{sx}_{ks}\delta^{l}_{i})$

$$g^{ik}_{x;jl} = g^{ik}_{;jl} + g^{sk}\Gamma^{i}_{se} + g^{is}\Gamma^{k}_{es} - g^{ik}\Gamma^{s}_{es}$$

$$= g^{ik}_{;jl} + g^{sk}\tfrac{1}{3}(\Gamma^{t}_{st}\delta^{i}_{e} - \Gamma^{t}_{et}\delta^{i}_{s}) + g^{is}\tfrac{1}{3}(\Gamma^{t}_{et}\delta^{k}_{s} - \Gamma^{t}_{st}\delta^{k}_{e}) \quad \Big| -1$$

$$g^{sk}_{x;s} = g^{sk}_{;s} + g^{sk}\tfrac{1}{3}(4\Gamma^{t}_{st} - \Gamma^{t}_{st}) + g^{ps}\tfrac{1}{3}\Gamma^{t}_{pt}\delta^{k}_{s} - \tfrac{1}{3}g^{ks}\Gamma^{t}_{st} \quad \Big| \tfrac{1}{2}\delta^{i}_{e}$$

$$g^{is}_{x;s} = g^{is}_{;s} + g^{is}\tfrac{1}{3}(-4\Gamma^{t}_{st} + \Gamma^{t}_{st}) + g^{sp}\tfrac{1}{3}(-\Gamma^{t}_{pt}\delta^{i}_{s} + \tfrac{1}{3}g^{si}\Gamma^{t}_{st}) \quad \Big| \tfrac{1}{2}\delta^{k}_{e}$$

$$\delta^{i}_{e}\left(-\tfrac{1}{3}g^{sk}\Gamma^{t}_{st} + \tfrac{1}{2}g^{sk}\Gamma^{t}_{st} - \tfrac{1}{6}g^{ks}\Gamma^{t}_{st}\right)$$

$$\delta^{k}_{e}\left(\quad\right)$$

$$+\Gamma^{t}_{et}\left(-\tfrac{1}{3}g^{ik} + \tfrac{1}{3}g^{ik}\right) + \tfrac{1}{6}g^{pk}\Gamma^{t}_{pt}\delta^{i}_{e} - \tfrac{1}{6}g^{ip}\Gamma^{t}_{pt}\delta^{k}_{e}$$

$$\Big|\; \tfrac{1}{3}g^{sk}\Gamma^{t}_{st} + \tfrac{1}{6}g^{ks}\Gamma^{t}_{st} \quad /\delta^{i}_{e}$$

$$-\tfrac{1}{2}g^{sk}\Gamma^{t}_{st}$$

$$-\tfrac{1}{6}(g^{ks} + g^{sk})\delta^{i}_{e}\Gamma^{t}_{st}$$

$$-U^{ik}{}_{l} + \tfrac{1}{2}\delta^{i}_{l}U^{sk}{}_{s} + \tfrac{1}{2}\delta^{k}_{l}U^{is}{}_{s} = -\tfrac{1}{2}g^{tk}\Gamma^{l}_{tl}\delta^{i}_{l} + \tfrac{1}{2}g^{it}\Gamma^{l}_{tl}\delta^{k}_{l}$$

$$-U^{is}{}_{s} + \tfrac{1}{2}U^{si}{}_{s} + 2U^{is}{}_{s} = -\tfrac{1}{2}g^{ti}\Gamma^{s}_{ts} + 2g^{it}\Gamma^{s}_{ts} \quad \Big| 1 \quad -\tfrac{3}{2}U^{si}{}_{s} = \tfrac{7}{2}g^{ti}\Gamma^{s}_{ts} + g^{it}\Gamma^{s}_{ts}$$

$$-U^{sk}{}_{s} + 2U^{sk}{}_{s} + \tfrac{1}{2}U^{ks}{}_{s} = -2g^{tk}\Gamma^{s}_{ts} + \tfrac{1}{2}g^{kt}\Gamma^{s}_{ts} \quad \Big| -2 \quad -\tfrac{3}{2}U^{is}{}_{s} = -g^{tk}\Gamma^{s}_{ts} - \tfrac{7}{2}g^{it}\Gamma^{s}_{ts}$$

$$-U^{ik}{}_{l} = \tfrac{1}{2}\left[-g^{tk}\Gamma^{s}_{ts} - \left(-\tfrac{7}{3}g^{tk}\Gamma^{s}_{ks} - \tfrac{2}{3}g^{kt}\Gamma^{s}_{ts}\right)\right]\delta^{i}_{l} +$$

$$\left(-\tfrac{2}{3}g^{tk}\Gamma^{s}_{ts} + \tfrac{1}{3}g^{kt}\Gamma^{s}_{ts}\right)\delta^{i}_{l} +$$

$$-\left(g^{ik}_{;jl} + U^{ik}{}_{l}\right) = \tfrac{1}{3}g^{sk}\Gamma^{t}_{st}\delta^{i}_{l} - \tfrac{2}{3}g^{tk}\Gamma^{s}_{ts}\delta^{i}_{l} + \tfrac{1}{3}g^{kt}\Gamma^{s}_{ts}\delta^{i}_{l}$$

$$\tfrac{1}{3}\left(g^{kt}\Gamma^{s}_{ts} - g^{tk}\Gamma^{s}_{ts}\right)\delta^{i}_{l}$$

$$\mathfrak{g}^{ik} \,\Big|\, \Gamma_{ik,s}^{s} - \Gamma_{is,k}^{s} + \Gamma_{it}^{s}\Gamma_{sk}^{t} + \Gamma_{ik}^{s}\Gamma_{st}^{t}$$

$$\mathfrak{g}^{rq}\Gamma_{rq}^{i}\delta_l^k \,\Big|\, \delta\Gamma_{ik}^{l}$$

$$+\,\delta\Gamma_{st}^{t}\,\Gamma_{ik}^{s}\,\mathfrak{g}^{ik}$$

$$-\mathfrak{g}^{ik}{}_{,l} + \mathfrak{g}^{is}{}_{,s}\delta_l^k + \mathfrak{g}^{st}\Gamma_{st}^{i}\delta_l^k \,\Big|\, + \mathfrak{g}^{it}\Gamma_{st}^{s} - \mathfrak{g}^{ik}\Gamma_{ts}^{s} \quad \delta_l^k$$

$$-\mathfrak{g}^{it}\Gamma_t$$

$$\delta_l^k\left(\mathfrak{g}^{is}{}_{,s} + \mathfrak{g}^{it}\Gamma_t\right)$$

$$(\mathfrak{g}^{is}{}_{,s} + \mathfrak{g}^{st}\Gamma_{st}^{i})\,\delta_l^k + \mathfrak{g}^{it}\Gamma_{st}^{s} - \mathfrak{g}^{it}\Gamma_{ts}^{s}$$

$$-\mathfrak{g}^{ik}{}_{,l} + \delta_l^k\left(\mathfrak{g}^{is}{}_{,s} + \mathfrak{g}^{it}\Gamma_t\right) = 0$$

$$3\mathfrak{g}^{is}{}_{,s} + 4\mathfrak{g}^{it}\Gamma_t = 0 \qquad \mathfrak{g}^{is}{}_{,s} = -\tfrac{4}{3}\mathfrak{g}^{it}\Gamma_t$$

$$\boxed{+\mathfrak{g}^{ik}{}_{,l} + \tfrac{1}{3}\delta_l^k\,\mathfrak{g}^{it}\Gamma_t = 0}$$

$$\boxed{\Gamma_{ik}^{l} = \overset{\times}{\Gamma}{}_{ik}^{l} + \alpha\,\delta_i^l\Gamma_k + \beta\,\delta_k^l\Gamma_i}$$

$$\Gamma_{\underset{\vee}{ik}}^{l} = \overset{\times}{\Gamma}{}_{ik}^{l} + \tfrac{1}{2}(\alpha-\beta)\,\delta_i^l\Gamma_k + \tfrac{1}{2}(\beta-\alpha)\,\delta_k^l\Gamma_i$$

$$\text{vorl. } \overset{\times}{\Gamma}{}_{\underset{\vee}{i\alpha}}^{\alpha} = 0$$

$$\Gamma_{\underset{\vee}{is}}^{s} = \tfrac{1}{2}(\alpha-\beta)\Gamma_i + 2(\beta-\alpha)\Gamma_i$$

$$= -\tfrac{3}{2}(\alpha-\beta)\Gamma_i \qquad \boxed{\alpha-\beta = -\tfrac{2}{3}}$$

$$\Gamma_{\underline{ik}}^{l} = \overset{\times}{\Gamma}{}_{ik}^{l} + \tfrac{1}{2}(\alpha+\beta)\left(\delta_i^l\Gamma_k + \delta_k^l\Gamma_i\right)$$

$$\Gamma_{\underline{ik}}^{l}$$

$$\mathfrak{g}^{ik}{}_{,l} + \mathfrak{g}^{sk}\Gamma_{sl}^{i} + \mathfrak{g}^{is}\Gamma_{ls}^{k} - \mathfrak{g}^{ik}\Gamma_{\underline{ls}}^{s}$$

$$\overset{\times}{\Gamma}{}_{sl}^{i} - \tfrac{2}{3}\delta_s^i\Gamma_l \qquad \overset{\times}{\Gamma}{}_{ls}^{k} - \tfrac{2}{3}\delta_l^k\Gamma_s \qquad -\mathfrak{g}^{ik}(\alpha+4\beta$$

Im hermit. Fall

$$\beta = \tfrac{1}{3} \quad \alpha = -\tfrac{1}{3}$$

$$\Gamma_{ik}^{l} = \overset{\times}{\Gamma}{}_{ik}^{l} + \tfrac{1}{3}\left(\Gamma_i\delta_k^l - \Gamma_k\delta_i^l\right)$$

$$\mathfrak{g}^{ik}{}_{\underset{\times}{,l}} - \tfrac{2}{3}\mathfrak{g}^{ik}\Gamma_l - \tfrac{2}{3}\mathfrak{g}^{is}\Gamma_s\delta_l^k \,\Big|\, + \tfrac{1}{3}\delta_l^k\,\mathfrak{g}^{it}\Gamma_t$$

$$-\tfrac{5}{2}(\alpha+\beta)\mathfrak{g}^{ik}\Gamma_l$$

hebt sich nicht weg.

$$\mathfrak{g}^{ik}{}_{\underset{\times}{,l}} + \mathfrak{g}^{sk}\left(\alpha\,\delta_s^i\Gamma_l + \beta\,\delta_l^i\Gamma_s\right) + \mathfrak{g}^{is}\left(\alpha\,\delta_l^k\Gamma_s + \beta\,\delta_s^k\Gamma_l\right) + \tfrac{1}{3}\delta_l^k\,\mathfrak{g}^{is}\Gamma_s$$

$$\underbrace{\alpha\,\mathfrak{g}^{ik}\Gamma_l + \beta\,\mathfrak{g}^{ik}\Gamma_l}_{} + \beta\,\delta_l^i\,\mathfrak{g}^{sk}\Gamma_s + \alpha\,\delta_l^k\,\mathfrak{g}^{is}\Gamma_s \quad -\tfrac{5}{2}(\alpha+\beta)\,\mathfrak{g}^{ik}\Gamma_l$$

$$\begin{matrix}\alpha+\beta = 0 \\ \alpha-\beta = -\tfrac{2}{3}\end{matrix} \;\Bigg|\; \begin{matrix}\alpha = -\tfrac{1}{3} \\ \beta = \tfrac{1}{3}\end{matrix} \qquad \text{bleiben übrig.}$$

$$(\alpha+\beta) - \tfrac{5}{2}(\alpha+\beta)$$

A. Einstein.