

$$\left(g_t\right)_{\omega}^{\zeta}=\exp \left(\zeta \bar{b}_t a_t^{-1} \zeta+2 \dot{\omega}^* a_t^{-1} \zeta-\dot{\omega}^* a_t^{-1} b_t \bar{\omega}\right)$$

$$\dot{g}=\frac{\alpha}{\overline{\beta}}\bigg|\frac{\beta}{\overline{\alpha}}$$

$$\left(\dot{g}\right)_{\omega}^{\zeta}=\mathfrak{e}^{2\dot{\omega}^*\zeta}\left(\zeta\bar{\beta}\zeta-2\dot{\omega}^*\alpha\zeta-\dot{\omega}^*\beta\bar{\omega}\right)$$

$$\int\limits_{d\omega}\mathfrak{e}^{-\omega|\omega}\mathfrak{e}^{2\dot{\omega}^*\zeta}\underbrace{\zeta\bar{\beta}\zeta-2\dot{\omega}^*\alpha\zeta-\dot{\omega}^*\beta\bar{\omega}}^{\omega}\mathcal{E}_{\varrho}$$

$$\int\limits_{d\omega}\mathfrak{e}^{-\omega|\omega}\mathfrak{e}^{2\zeta|\omega}\underbrace{\bar{\beta}\zeta|\bar{\zeta}-2\alpha\zeta|\omega-\beta\bar{\omega}|\omega}^{\omega}\mathcal{E}_{\varrho}\\ =\overline{T_{\bar{\beta}\zeta|\bar{\zeta}-2\alpha\zeta|\omega-\beta\bar{\omega}|\omega}}^{\omega}\mathcal{E}_{\varrho}$$

$$=\underbrace{\zeta\bar{\beta}\zeta}^{+\bar{-}}\int\limits_{d\omega}\mathfrak{e}^{-\omega|\omega}\mathfrak{e}^{2\dot{\omega}^*\zeta}{}^{\omega}\mathcal{E}_{\varrho}-2\int\limits_{d\omega}\mathfrak{e}^{-\omega|\omega}\mathfrak{e}^{2\dot{\omega}^*\zeta}\underbrace{\dot{\omega}^*\alpha\zeta}^{\omega}\mathcal{E}_{\varrho}-\int\limits_{d\omega}\mathfrak{e}^{-\omega|\omega}\mathfrak{e}^{2\dot{\omega}^*\zeta}\underbrace{\dot{\omega}^*\beta\bar{\omega}}^{\omega}\mathcal{E}_{\varrho}\\ \underbrace{\zeta\bar{\beta}\zeta}^{+\bar{-}}{}^{\zeta}\mathcal{E}_{\varrho}-\partial\mathfrak{z}$$