

$$\overline{d\tau^g \Sigma 1 + 1 \Sigma \tau} = \underline{d\tau^g} \Sigma 1 + 1 \Sigma \underline{d\tau}$$

$$\begin{aligned} \overline{d\tau^g \Sigma 1 + 1 \Sigma \tau}_{b \times b'} &= \overline{\tau^g \Sigma 1 + 1 \Sigma \tau}_b \times \overline{\tau^g \Sigma 1 + 1 \Sigma \tau}_b - \overline{\tau^g \Sigma 1 + 1 \Sigma \tau}_{b \times b'} = \\ &\overline{\tau^g \Sigma 1 + 1 \Sigma \tau}_b \times \overline{\tau^g \Sigma 1 + 1 \Sigma \tau}_b - \tau^g_{b \times b'} \Sigma 1 - 1 \Sigma \tau_{b \times b'} = \\ &\overline{\tau^g \times \tau^g}_b \Sigma 1 - \overline{\tau^g}_{b \times b'} \Sigma 1 + 1 \Sigma \overline{\tau \times \tau}_b - 1 \Sigma \tau_{b \times b'} + \\ &\tau^g_{b \times b'} \Sigma \tau_b + \tau^g_{b \times b'} \Sigma \tau_b - \tau^g_{b \times b'} \Sigma \tau_b - \tau^g_{b \times b'} \Sigma \tau_b = \underline{d\tau^g}_{b \times b'} \Sigma 1 + 1 \Sigma \underline{d\tau}_{b \times b'} \end{aligned}$$