

$$\begin{aligned}\widehat{\underline{\mathcal{H}}_b \mathcal{H}}_z &= \underline{\mathcal{H}} \mathcal{H}_z \underline{\mathcal{E} \mathcal{V}}_z + \underline{\mathcal{H}} \mathcal{H}_z \widehat{\underline{\mathcal{H}} \mathcal{H}} \underline{\mathcal{E} \mathcal{V}}_z \\ \underline{\mathcal{L}} \widehat{\underline{\mathcal{H}} \mathcal{H}} \mathbb{I} &= \widehat{(\underline{\mathcal{L}} \mathcal{H})}_{(\mathbb{I} \underline{\mathcal{V}})_z} \mathcal{H}_z\end{aligned}$$

$$\widehat{\underline{\mathcal{H}} \mathcal{H} \mathbb{I}} \tilde{\mathcal{L}} = \tilde{\mathcal{L}} \underline{\mathcal{E} \mathcal{V}} \mathbb{I} \underline{\mathcal{L}} + \mathbb{I} \tilde{\mathcal{L}}$$

$$\begin{aligned}\underline{\mathcal{L}}^z \tilde{\mathcal{L}} &= \underline{\mathcal{L}} \Rightarrow (\underline{\mathcal{L}} \mathbb{I})^z \tilde{\mathcal{L}} + \underline{\mathcal{L}} \mathbb{I} \underline{\mathcal{L}}^z = \underline{\mathcal{L}} \underline{\mathcal{L}}^z (\mathbb{I}^z \underline{\mathcal{L}}) \\ \Rightarrow \underline{\mathcal{H}} \mathcal{H}_z (\underline{\mathcal{E} \mathcal{V}})_z \tilde{\mathcal{L}} &+ ((\underline{\mathcal{H}} \mathcal{H}_z) \widehat{\underline{\mathcal{H}} \mathcal{H}} (\underline{\mathcal{E} \mathcal{V}})_z) \tilde{\mathcal{L}} = \widehat{\underline{\mathcal{H}}_b \mathcal{H}} z \tilde{\mathcal{L}} = \widehat{\underline{\mathcal{H}}_b \mathcal{H}} \underline{\mathcal{V}}_{z \mathcal{L}} = \\ \underline{\mathcal{R}} \underline{\mathcal{L}}_{z \mathcal{L}} \underline{\mathcal{L}} \underline{\mathcal{V}}_{z \mathcal{L}} &+ \underline{\mathcal{R}} \underline{\mathcal{L}}_{z \mathcal{L}} \underline{\mathcal{E} \mathcal{V}} \underline{\mathcal{L}} \underline{\mathcal{V}}_{z \mathcal{L}} = \underline{\mathcal{H}} \mathcal{H}_z (\underline{\mathcal{E} \mathcal{V}})_z \tilde{\mathcal{L}} + \underline{\mathcal{H}} \mathcal{H}_z (\underline{\mathcal{E} \mathcal{V}})_z \tilde{\mathcal{L}} + \underline{\mathcal{E} \mathcal{V}} \underline{\mathcal{L}} + \underline{\mathcal{H}} \mathcal{H}_z \tilde{\mathcal{L}} ((\underline{\mathcal{E} \mathcal{V}})_z \tilde{\mathcal{L}})\end{aligned}$$