$$\underline{w}\ \underbrace{\alpha_w \overset{*}{\beta}_w} = \underline{\alpha - \bar{\alpha}}\ \underline{w}\ \bar{u}^1\ \overbrace{\overset{*}{\beta} + \overset{t}{\beta} + \overset{*}{w}\underline{\overset{*}{\beta} - \overset{t}{\beta}}} - \frac{1}{2}\overbrace{\alpha + \bar{\alpha} + \underline{\alpha - \bar{\alpha}} w}\ \bar{u}^1\ \left(\underline{w} + \overset{*}{\underline{w}}\right)\ \bar{u}^1\ \overbrace{\overset{*}{\beta} + \overset{t}{\beta} + \overset{*}{w}\underline{\overset{*}{\beta} - \overset{t}{\beta}}}$$
$$+ \overbrace{\alpha + \bar{\alpha} + \underline{\alpha - \bar{\alpha}} w}\ \bar{u}^1\ \overset{*}{\underline{w}}\ \underline{\overset{*}{\beta} - \overset{t}{\beta}}$$

$$-\underline{w}\ \underbrace{\alpha_w \overset{*}{\beta}_w}/2 = \bar{\alpha}\ \underline{w}\ \overset{*}{\beta} + \alpha\ \overset{*}{\underline{w}}\ \overset{t}{\beta}$$

$$\underline{w}\ \underbrace{\alpha_w \overset{*}{\beta}_w}/2 = \underline{\alpha - \bar{\alpha}}\ \underline{w}\ \overset{*}{\beta} - \alpha\left(\underline{w} + \overset{*}{\underline{w}}\right)\ \overset{*}{\beta} + \alpha\ \overset{*}{\underline{w}}\ \underline{\overset{*}{\beta} - \overset{t}{\beta}}$$
$$= \alpha\ \underline{w}\ \overset{*}{\beta} - \bar{\alpha}\ \underline{w}\ \overset{*}{\beta} - \alpha\ \underline{w}\ \overset{*}{\beta} - \alpha\ \overset{*}{\underline{w}}\ \overset{*}{\beta} + \alpha\ \overset{*}{\underline{w}}\ \overset{*}{\beta} - \alpha\ \overset{*}{\underline{w}}\ \overset{t}{\beta} = -\ \text{RHS}$$

$$\underline{w}\ \underbrace{\zeta_w \overset{*}{\sigma}_w - \sigma_w \overset{*}{\sigma}_w/2 - \zeta_w \overset{*}{\zeta}_w/2} = \underline{\bar{\zeta} - \bar{\sigma}}\ \underline{w}\ \underline{\overset{*}{\zeta} - \overset{*}{\sigma}} + \underline{\zeta - \sigma}\ \overset{*}{\underline{w}}\ \underline{\overset{t}{\zeta} - \overset{t}{\sigma}}$$

$$\text{LHS} = \bar{\sigma}\ \underline{w}\ \overset{*}{\sigma} + \sigma\ \overset{*}{\underline{w}}\ \overset{t}{\sigma} + \bar{\zeta}\ \underline{w}\ \overset{*}{\zeta} + \zeta\ \overset{*}{\underline{w}}\ \overset{t}{\zeta} - 2\bar{\zeta}\ \underline{w}\ \overset{*}{\sigma} - 2\zeta\ \overset{*}{\underline{w}}\ \overset{t}{\sigma}$$

$$\bar{\sigma}\ \underline{w}\ \overset{*}{\zeta} = \overbrace{\bar{\sigma}\underline{w}\overset{*}{\zeta}}^{t} = \bar{\zeta}\ \overset{t}{\underline{w}}\ \overset{*}{\sigma} = \bar{\zeta}\ \underline{w}\ \overset{*}{\sigma}$$

$$\sigma\ \overset{*}{\underline{w}}\ \overset{t}{\zeta} = \overbrace{\sigma\overset{*}{\underline{w}}\overset{t}{\zeta}}^{t} = \zeta\ \overset{*}{\underline{w}}{}^t\ \overset{t}{\sigma} = \zeta\ \overset{*}{\underline{w}}\ \overset{t}{\sigma}$$

$$\overbrace{\underline{w}_e \underline{E}}^{\zeta}{}_{\sigma} = \underline{w}\ {}^{\zeta}_{e}\underline{E}_{\sigma} = \mathbf{e}^{\zeta\overset{*}{\sigma} - \sigma\overset{*}{\sigma}/2 - \zeta\overset{*}{\zeta}/2}\ \overbrace{\underline{\zeta - \sigma}\ \overset{*}{\underline{w}}\ \underline{\overset{t}{\zeta} - \overset{t}{\sigma}} + \underline{\bar{\zeta} - \bar{\sigma}}\ \underline{w}\ \underline{\overset{*}{\zeta} - \overset{*}{\sigma}}}$$

$$\text{LHS} = {}^{\zeta}_{e}E_{\sigma}\ \overbrace{\underline{\bar{\zeta} - \bar{\sigma}}\ \underline{w}\ \underline{\overset{*}{\zeta} - \overset{*}{\sigma}} + \underline{\zeta - \sigma}\ \overset{*}{\underline{w}}\ \underline{\overset{t}{\zeta} - \overset{t}{\sigma}}} = \text{RHS}$$

$$ {}^{\zeta}\overset{*}{\mathcal{K}}_{\sigma} = {}^{\sigma}\bar{\mathcal{K}}_{\zeta} $$

$$ \int\limits_{d\zeta} \overline{\int\limits_{d\sigma} {}^{\zeta}\overset{*}{\mathcal{K}}_{\sigma}{}^{\sigma}\varphi} {}^{\zeta}\psi = \int\limits_{d\zeta} {}^{\zeta}\overline{\overset{*}{\mathcal{K}}\varphi}\,{}^{\zeta}\psi = \underbrace{\overset{*}{\mathcal{K}}\varphi}\,\overset{*}{\boldsymbol{\varkappa}}\psi = \varphi\overset{*}{\boldsymbol{\varkappa}}\overline{\mathcal{K}\psi} = \int\limits_{d\sigma} {}^{\sigma}\bar{\varphi}\,{}^{\sigma}\overline{\mathcal{K}\psi} = \int\limits_{d\sigma} {}^{\sigma}\bar{\varphi} \int\limits_{d\zeta} {}^{\sigma}\mathcal{K}_{\zeta}\,{}^{\zeta}\psi = \int\limits_{d\sigma} \overline{\int\limits_{d\zeta} {}^{\sigma}\bar{\mathcal{K}}_{\zeta}{}^{\sigma}\varphi} {}^{\zeta}\psi $$

$$ \overset{*}{\underline{w}_{e}\underline{E}} = \underline{w}\,{}_{e}\underline{E} $$

$$ \begin{aligned} {}^{\zeta}\overset{*}{\underline{w}_{e}\underline{E}}_{\sigma} = \overline{\underline{w}\,{}^{\sigma}_{e}\underline{E}_{\zeta}} &= {}^{\sigma}_{e}\bar{E}_{\zeta}\,\overline{\underbrace{\sigma-\zeta}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\sigma}-\overset{t}{\zeta}} + \underbrace{\bar{\sigma}-\bar{\zeta}}\,\underline{w}\,\underbrace{\overset{*}{\sigma}-\overset{*}{\zeta}}} \\ &= {}^{\zeta}_{e}E_{\sigma}\,\overbrace{\underbrace{\zeta-\sigma}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\zeta}-\overset{t}{\sigma}} + \underbrace{\bar{\zeta}-\bar{\sigma}}\,\underline{w}\,\underbrace{\overset{*}{\zeta}-\overset{*}{\sigma}}} = \underline{w}\,{}^{\zeta}_{e}\underline{E}_{\sigma} \end{aligned} $$

$$ \overbrace{\underline{w}_{e}\underline{E}}\,\underbrace{\mathfrak{e}^{-\zeta\overset{*}{\zeta}/2}\mathfrak{y}} = \mathfrak{e}^{-\zeta\overset{*}{\zeta}/2}\,\underbrace{\bar{\zeta}-\partial}\,\underline{w}\,\underbrace{\overset{*}{\zeta}-\overset{t}{\partial}}\,\mathfrak{y} $$

$$ \begin{aligned} \underline{w}\,{}^{\zeta}_{e}\underline{E}_{\sigma} = {}^{\zeta}_{e}E_{\sigma}\,\overbrace{\underbrace{\bar{\sigma}-\bar{\zeta}}\,\underline{w}\,\underbrace{\overset{*}{\sigma}-\overset{*}{\zeta}} + \underbrace{\sigma-\zeta}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\sigma}-\overset{t}{\zeta}}} &= \mathfrak{e}^{\zeta\overset{*}{\sigma}-\sigma\overset{*}{\sigma}/2-\zeta\overset{*}{\zeta}/2}\,\overbrace{\underbrace{\bar{\sigma}-\bar{\zeta}}\,\underline{w}\,\underbrace{\overset{*}{\sigma}-\overset{*}{\zeta}} + \underbrace{\sigma-\zeta}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\sigma}-\overset{t}{\zeta}}} \\ \mathfrak{e}^{\zeta\overset{*}{\zeta}/2}\,{}^{\zeta}\overbrace{\underline{w}_{e}\underline{E}\mathfrak{y}} = \mathfrak{e}^{\zeta\overset{*}{\zeta}/2}\int\limits_{d\sigma}^{\mathbb{C}^n} \mathfrak{e}^{\zeta\overset{*}{\sigma}-\sigma\overset{*}{\sigma}/2-\zeta\overset{*}{\zeta}/2}\,\overbrace{\underbrace{\bar{\sigma}-\bar{\zeta}}\,\underline{w}\,\underbrace{\overset{*}{\sigma}-\overset{*}{\zeta}} + \underbrace{\sigma-\zeta}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\sigma}-\overset{t}{\zeta}}}\,{}^{\sigma}\mathfrak{y}\,\mathfrak{e}^{-\sigma\overset{*}{\sigma}/2} & \\ = \int\limits_{d\sigma}^{\mathbb{C}^n} \mathfrak{e}^{\zeta\overset{*}{\sigma}-\sigma\overset{*}{\sigma}}\,\overbrace{\underbrace{\bar{\sigma}-\bar{\zeta}}\,\underline{w}\,\underbrace{\overset{*}{\sigma}-\overset{*}{\zeta}} + \underbrace{\sigma-\zeta}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\sigma}-\overset{t}{\zeta}}}\,{}^{\sigma}\mathfrak{y} = {}^{\zeta}\overbrace{\underbrace{\partial-\bar{\zeta}}\,\underline{w}\,\underbrace{\overset{t}{\partial}-\overset{*}{\zeta}}\,\mathfrak{y}} + {}^{\zeta}\overbrace{\underbrace{\imath-\zeta}\,\underline{\overset{*}{w}}\,\underbrace{\overset{t}{\imath}-\overset{t}{\zeta}}\,\mathfrak{y}}^{=0} & \end{aligned} $$

$$ \underbrace{\bar{\zeta}-\partial}\,\overset{t}{\alpha}\,\beta\,\underbrace{\overset{*}{\zeta}-\overset{t}{\partial}} = \underbrace{\alpha\overset{*}{\zeta}-\partial_{\alpha}}\,\overbrace{\beta\overset{*}{\zeta}-\partial_{\beta}}^{t} $$

$$ \begin{aligned} \text{LHS} &= \begin{bmatrix}\partial_1-\zeta_1 & \partial_n-\zeta_n\end{bmatrix}\begin{bmatrix}{}^{1}a \\ {}^{n}a\end{bmatrix}\begin{bmatrix}b_1 & b_n\end{bmatrix}\begin{bmatrix}\partial_1-\zeta_1 \\ \partial_n-\zeta_n\end{bmatrix} = \underbrace{\overbrace{\partial_i-\zeta_i}\,{}^{i}a}\,\overbrace{b_j\underbrace{\partial_j-\zeta_j}} \\ \overbrace{\partial_i-\zeta_i}\,{}^{i}a &= \partial_i\,{}^{i}a - \zeta_i\,{}^{i}a = \partial_a - \zeta\overset{t}{a}\colon \quad b_j\underbrace{\partial_j-\zeta_j} = b_j\,\partial_j - b_j\,\zeta_j = \partial_b - \zeta\overset{t}{b} \end{aligned} $$