$$
{}^{x}\overbrace{\hat{\pi}_g \text{℩}} = {}^{x}\hat{\delta}_g^{\,1/2}\;{}^{\hat{g}\,(x)}\text{℩} : \quad \hat{\pi}_g \text{℩} = \hat{\delta}_g^{\,1/2}\;\underbrace{\hat{\varrho}_g \text{℩}}
$$

$$
\hat{\underline{\pi}}_\gamma \text{℩} = \frac{1}{2}\hat{\underline{\delta}}_\gamma \text{℩} + \hat{\underline{\varrho}}_\gamma \text{℩}
$$

$$
\hat{\underline{\pi}}_w \text{℩} = 2\,\partial_{w\overset{*}{u}x} \text{℩} + \underbrace{w \text{⧗} u + u \text{⧗} w}\left(1 + \frac{\alpha - p}{2} + \alpha\partial_x\right)\text{℩} + \frac{1+\alpha}{2}\underbrace{w \text{⧗} x + x \text{⧗} w}\frac{\underline{\varrho}}{\varrho}\text{℩}
$$

$$
\hat{\underline{\pi}}_w \text{℩} = \frac{1}{2}\hat{\underline{\delta}}_w \text{℩} + \hat{\underline{\varrho}}_w \text{℩} = \underbrace{1 + \frac{\alpha - p}{2} + t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho}\,\underbrace{w \text{⧗} u + u \text{⧗} w}\text{℩} + \overbrace{2\partial_{w\overset{*}{u}x} + \alpha\underbrace{w \text{⧗} u + u \text{⧗} w}\partial_x}\text{℩}
$$

$$
= 2\,\partial_{w\overset{*}{u}x} \text{℩} + \underbrace{w \text{⧗} u + u \text{⧗} w}\left(1 + \frac{\alpha - p}{2} + t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho + \alpha\partial_x\right)\text{℩} = \text{ RHS}
$$

$$
\phi \text{⧗} \overbrace{\hat{\underline{\pi}}_w \psi} = 2\phi \text{⧗} \overbrace{\partial_{w\overset{*}{u}x}\psi} + \phi \text{⧗} \overbrace{\underbrace{w \text{⧗} u}\left(1 + \frac{\alpha - p}{2} + \alpha\partial_x\right)\psi} + \frac{1+\alpha}{2}\phi \text{⧗} \overbrace{\underbrace{w \text{⧗} x}\frac{\underline{\varrho}}{\varrho}\psi}
$$

$$
+ \overbrace{\underbrace{w \text{⧗} u}\phi} \text{⧗} \overbrace{\underbrace{1 + \frac{\alpha - p}{2} + \alpha\partial_x}\psi} + \frac{1+\alpha}{2}\overbrace{\underbrace{w \text{⧗} x}\frac{\underline{\varrho}}{\varrho}\phi} \text{⧗} \psi
$$

$$
\text{LHS } = 2\phi \text{⧗} \overbrace{\partial_{w\overset{*}{u}x}\psi} + \phi \text{⧗} \overbrace{\underbrace{w \text{⧗} u + u \text{⧗} w}\left(1 + \frac{\alpha - p}{2} + \alpha\partial_x\right)\psi} + \frac{1+\alpha}{2}\phi \text{⧗} \overbrace{\underbrace{w \text{⧗} x + x \text{⧗} w}\frac{\underline{\varrho}}{\varrho}\psi} = \text{ RHS}
$$

$$2\phi \barwedge \overbrace{\partial_{w\overset{*}{u}x}\psi} + \phi \barwedge \overbrace{\underbrace{w \bowtie u}\left(2+\alpha-p+t\left(1+\alpha\right){}^{t}\underline{\varrho}/{}^{t}\varrho\right)\psi} + \alpha\phi \barwedge \overbrace{\underbrace{w \bowtie u}\partial_x\psi} + \alpha\,\overbrace{\partial_x\phi} \barwedge \overbrace{\underbrace{w \bowtie u}\psi} = 0$$

$$0 = \phi \barwedge \underbrace{\overset{\wedge}{\underline{\pi}}_w\psi} + \underbrace{\overset{\wedge}{\underline{\pi}}_w\phi} \barwedge \psi = \phi \barwedge \overbrace{2\partial_{w\overset{*}{u}x}\psi + \underbrace{w \bowtie u + u \bowtie w}\left(1+\frac{\alpha-p}{2}+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho+\alpha\partial_x\right)\psi}$$

$$+\overbrace{2\partial_{w\overset{*}{u}x}\phi + \underbrace{w \bowtie u + u \bowtie w}\left(1+\frac{\alpha-p}{2}+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho+\alpha\partial_x\right)\phi} \barwedge \psi$$

$$0 = 2\phi \barwedge \overbrace{\partial_{w\overset{*}{u}x}\psi} + \phi \barwedge \overbrace{\underbrace{w \bowtie u}\left(1+\frac{\alpha-p}{2}+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho+\alpha\partial_x\right)\psi}$$

$$+\overbrace{\underbrace{u \bowtie w}\left(1+\frac{\alpha-p}{2}+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho+\alpha\partial_x\right)\phi} \barwedge \psi = \text{ LHS}$$

$$\partial_{w\overset{*}{u}x}\varphi + \underbrace{w \bowtie u}\left(1-\frac{p}{2}+\alpha\partial_x\right)\varphi + \frac{1+\alpha}{2}\underbrace{w \bowtie x}\left({}^{t}\underline{\varrho}/{}^{t}\varrho\right)\varphi \in \mathcal{H}^{\perp}$$

$$2\,\partial_{w\overset{*}{u}x}\mathcal{E}_b^{m+} + \underbrace{w \bowtie u}\left(2-p+2\alpha\left(m+1\right)+t\left(1+\alpha\right){}^{t}\underline{\varrho}/{}^{t}\varrho\right)\mathcal{E}_b^{m+} \in \mathcal{H}^{\perp}$$

$$0 = 2\,\mathcal{E}_a^m \barwedge \overbrace{\partial_{w\overset{*}{u}x}\mathcal{E}_b^{m+}} + \mathcal{E}_a^m \barwedge \overbrace{\underbrace{w \bowtie u}\left(2+\alpha-p+t\left(1+\alpha\right){}^{t}\underline{\varrho}/{}^{t}\varrho\right)\mathcal{E}_b^{m+}}$$

$$+\alpha\,\mathcal{E}_a^m \barwedge \overbrace{\underbrace{w \bowtie u}\partial_x\mathcal{E}_b^{m+}} + \alpha\,\overbrace{\partial_x\mathcal{E}_a^m} \barwedge \overbrace{\underbrace{w \bowtie u}\mathcal{E}_b^{m+}}$$

$$= 2\,\mathcal{E}_a^m \barwedge \overbrace{\partial_{w\overset{*}{u}x}\mathcal{E}_b^{m+}} + \mathcal{E}_a^m \barwedge \overbrace{\underbrace{w \bowtie u}\left(2+\alpha-p+t\left(1+\alpha\right){}^{t}\underline{\varrho}/{}^{t}\varrho\right)\mathcal{E}_b^{m+}} + \alpha\left(2m+1\right)\mathcal{E}_a^m \barwedge \overbrace{\underbrace{w \bowtie u}\mathcal{E}_b^{m+}}$$

$$c_{m+}\,\varrho_{2m+1}\,{}^{a}\mathcal{E}_b^m\,\underbrace{w \bowtie b}\left(2m+p+2+\alpha-p+\alpha\left(2m+1\right)-\left(1+\alpha\right)\left(2m+2\right)\right) = 0$$

$$\overset{\wedge}{\underline{\pi}}_w\,\mathcal{E}_b^{m+} = 2\,\partial_{w\overset{*}{u}x}\mathcal{E}_b^{m+} + \underbrace{w \bowtie u + u \bowtie w}\left(1+\frac{\alpha-p}{2}+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho+\alpha\partial_x\right)\mathcal{E}_b^{m+}$$

$$= 2\,\partial_{w\overset{*}{u}x}\mathcal{E}_b^{m+} + \underbrace{w \bowtie u + u \bowtie w}\left(1+\frac{\alpha-p}{2}+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho\right)\mathcal{E}_b^{m+} + \alpha\left(m+1\right)\underbrace{w \bowtie u + u \bowtie w}\mathcal{E}_b^{m+}$$

$$= 2\,\partial_{w\overset{*}{u}x}\mathcal{E}_b^{m+} + \underbrace{w \bowtie u + u \bowtie w}\left(1+\frac{\alpha-p}{2}+\alpha\left(m+1\right)+t\frac{1+\alpha}{2}{}^{t}\underline{\varrho}/{}^{t}\varrho\right)\mathcal{E}_b^{m+}$$

$$2w\overset{*}{u}x + \alpha\underbrace{w \bowtie u}x = \overbrace{e_i \bowtie u}\,\underbrace{2w\overset{*}{e}_i x + \alpha\underbrace{w \bowtie e_i}x}$$

$$-\pi'_w\,\mathcal{E}_b^{\,n} = \underbrace{\beta_{\,t} + \alpha n}\,\underbrace{w \mathbin{⧗} u + u \mathbin{⧗} w}\,\mathcal{E}_b^{\,n} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,n}$$

$$x\,\mathcal{E}_{\underline{b}}^{\,n} = \underbrace{x \mathbin{⧗} b}\,\mathcal{E}_b^{\,n-} = n\,\mathcal{E}_b^{\,n}$$

$$\underbrace{2\beta_{\,t} + \alpha\,(2m+1)}\,\underbrace{w \mathbin{⧗} u}\,\mathcal{E}_b^{\,m+} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,m+} \in \mathcal{H}^{\perp}$$

$$\mathcal{E}_a^{\,m} \mathbin{⧖} \overbrace{\underbrace{\beta_{\,t} + \alpha n}\,\underbrace{w \mathbin{⧗} u + u \mathbin{⧗} w}\,\mathcal{E}_b^{\,n} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,n}} + \overbrace{\underbrace{\beta_{\,t} + \alpha m}\,\underbrace{w \mathbin{⧗} u + u \mathbin{⧗} w}\,\mathcal{E}_a^{\,m} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{a}}^{\,m}} \mathbin{⧖} \mathcal{E}_b^{\,n}$$

$$= -\,\mathcal{E}_a^{\,m} \mathbin{⧖} \underbrace{\pi'_w\mathcal{E}_b^{\,n}} - \underbrace{\pi'_w\mathcal{E}_a^{\,m}} \mathbin{⧖} \mathcal{E}_b^{\,n} = 0$$

$$0 = \mathcal{E}_a^{\,m} \mathbin{⧖} \overbrace{\underbrace{\beta_{\,t} + \alpha\,(m+1)}\,\underbrace{w \mathbin{⧗} u}\,\mathcal{E}_b^{\,m+} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,m+}} + \overbrace{\underbrace{\beta_{\,t} + \alpha m}\,\underbrace{u \mathbin{⧗} w}\,\mathcal{E}_a^{\,m}} \mathbin{⧖} \mathcal{E}_b^{\,m+}$$

$$= \underbrace{2\beta_{\,t} + \alpha\,(2m+1)}\,\mathcal{E}_a^{\,m} \mathbin{⧖} \overbrace{\underbrace{w \mathbin{⧗} u}\,\mathcal{E}_b^{\,m+}} + 2\,\mathcal{E}_a^{\,m} \mathbin{⧖} \overbrace{\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,m+}}$$

$$= \mathcal{E}_a^{\,m} \mathbin{⧖} \overbrace{\underbrace{2\beta_{\,t} + \alpha\,(2m+1)}\,\underbrace{w \mathbin{⧗} u}\,\mathcal{E}_b^{\,m+} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,m+}}$$

$$-\pi'_w\,\mathcal{E}_b^{\,m+} = \underbrace{\beta_{\,t} + \alpha\,(m+1)}\,\underbrace{w \mathbin{⧗} u + u \mathbin{⧗} w}\,\mathcal{E}_b^{\,m+} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,m+}$$

$$= \underbrace{2\beta_{\,t} + \alpha\,(2m+1)}\,\underbrace{w \mathbin{⧗} u}\,\mathcal{E}_b^{\,m+} + 2\,\underbrace{w\overset{*}{u}x}\,\mathcal{E}_{\underline{b}}^{\,m+} + \underbrace{\beta_{\,t} + \alpha m}\,\underbrace{u \mathbin{⧗} w - w \mathbin{⧗} u}\,\mathcal{E}_b^{\,m+} + \alpha\,\underbrace{u \mathbin{⧗} w}\,\mathcal{E}_b^{\,m+}$$

$$\frac{2}{p}\,\underbrace{e_{\,i}\overset{*}{e}_{\,i}x}\,\underline{\daleth} = n\daleth = E\daleth \text{ Euler}$$

$$\underbrace{e_{\,i}\overset{*}{e}_{\,i}x}\,\mathcal{E}_b^{\,n} = \overbrace{\underbrace{e_{\,i}\overset{*}{e}_{\,i}x} \mathbin{⧗} b}\,\mathcal{E}_b^{\,n-} = \frac{p}{2}x \mathbin{⧗} b\,\mathcal{E}_b^{\,n-} = n\frac{p}{2}\,\mathcal{E}_b^{\,n}$$

$$\pi'_w\varphi = \underbrace{\alpha_w + \bar{\alpha}_w}\varphi + \gamma_{\,w}\,\underline{\varphi}$$

$$0 = \underbrace{\pi'_w\varphi} \mathbin{⧖} \psi + \varphi \mathbin{⧖} \underbrace{\pi'_w\psi} = \overbrace{\underbrace{\alpha_w + \bar{\alpha}_w}\varphi + \gamma_{\,w}\underline{\varphi}} \mathbin{⧖} \psi + \varphi \mathbin{⧖} \overbrace{\underbrace{\alpha_w + \bar{\alpha}_w}\psi + \gamma_{\,w}\underline{\psi}} = \varphi \mathbin{⧖} \overbrace{2\alpha_w\psi + \gamma_{\,w}\underline{\psi}} + \overbrace{2\alpha_w\varphi + \gamma_{\,w}\underline{\varphi}} \mathbin{⧖} \psi$$

$$\Rightarrow \varphi \mathbin{⧖} \overbrace{2\alpha_w\psi + \gamma_{\,w}\underline{\psi}} = 0 = \overbrace{2\alpha_w\varphi + \gamma_{\,w}\underline{\varphi}} \mathbin{⧖} \psi \Rightarrow 2\,\alpha_w\,\varphi + \gamma_{\,w}\,\underline{\varphi} \in \mathcal{H}^{\perp}$$

$$\pi'_w\daleth = \underbrace{\alpha_w + \bar{\alpha}_w}\daleth + \gamma_{\,w}\,\underline{\daleth} = \pi'_w\daleth = \overbrace{2\alpha_w + \gamma_{\,w}\underline{\daleth}} + \underbrace{\bar{\alpha}_w - \alpha_w}\daleth$$

$$P\left(\pi'_w \daleth\right) = P\left(\underbrace{\bar{\alpha}_w - \alpha_w}\daleth\right) = T_{\bar{\alpha}_w - \alpha_w}\daleth$$

$$0 = \underbrace{\pi'_w \mathcal{E}^m_a} \barwedge \mathcal{E}^n_b + \mathcal{E}^m_a \barwedge \underbrace{\pi'_w \mathcal{E}^n_b} = \overbrace{\underbrace{\alpha_w + \bar{\alpha}_w}\mathcal{E}^m_a + \hat{\gamma}_w \mathcal{E}^m_{-a}} \barwedge \mathcal{E}^n_b + \mathcal{E}^m_a \barwedge \overbrace{\underbrace{\alpha_w + \bar{\alpha}_w}\mathcal{E}^n_b + \hat{\gamma}_w \mathcal{E}^n_{-b}}$$

$$= \overbrace{\underbrace{\alpha_w + \bar{\alpha}_w}\mathcal{E}^m_a + \underbrace{w\overset{*}{u}x}\mathcal{E}^m_{-a} + \alpha m \underbrace{w \Join u + u \Join w}\mathcal{E}^m_a} \barwedge \mathcal{E}^n_b + \mathcal{E}^m_a \barwedge \overbrace{\underbrace{\alpha_w + \bar{\alpha}_w}\mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\mathcal{E}^n_{-b} + \alpha n \underbrace{w \Join u + u \Join w}\mathcal{E}^n_b}$$

$$0 = \overbrace{\bar{\alpha}_w \mathcal{E}^m_a + \alpha \underbrace{u \Join w} m \mathcal{E}^m_a} \barwedge \mathcal{E}^n_b + \mathcal{E}^m_a \barwedge \overbrace{\alpha_w \mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\mathcal{E}^n_{-b} + \alpha \underbrace{w \Join u} n \mathcal{E}^n_b}$$

$$= \mathcal{E}^m_a \barwedge \overbrace{\underbrace{2\alpha_w + \alpha\left(m+n\right) w \Join u}\mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\mathcal{E}^n_{-b}} = \mathcal{E}^m_a \barwedge \overbrace{\underbrace{2\alpha_w + \alpha\left(2n-1\right) w \Join u}\mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\mathcal{E}^n_{-b}}$$

$$\underbrace{2\alpha_w + \alpha\left(2n-1\right) w \Join u}\,\mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\,\mathcal{E}^n_{-b} \in \mathcal{H}^{\perp}$$

$$\pi'_w\,\mathcal{E}^n_b = \underbrace{\alpha_w + \bar{\alpha}_w}\,\mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\,\mathcal{E}^n_{-b} + \alpha \underbrace{w \Join u + u \Join w} n\,\mathcal{E}^n_b$$

$$= \underbrace{2\alpha_w + \alpha\left(2n-1\right) w \Join u}\,\mathcal{E}^n_b + \underbrace{w\overset{*}{u}x}\,\mathcal{E}^n_{-b} + \underbrace{\bar{\alpha}_w - \alpha_w + \alpha w \Join u + \alpha\left(u \Join w - w \Join u\right) n}\,\mathcal{E}^n_b$$

$$P\left(\pi'_w \mathcal{E}^n_b\right) = P\left(\underbrace{\bar{\alpha}_w - \alpha_w + \alpha w \Join u}\mathcal{E}^n_b + \alpha \underbrace{u \Join w - w \Join u} n \mathcal{E}^n_b\right)$$