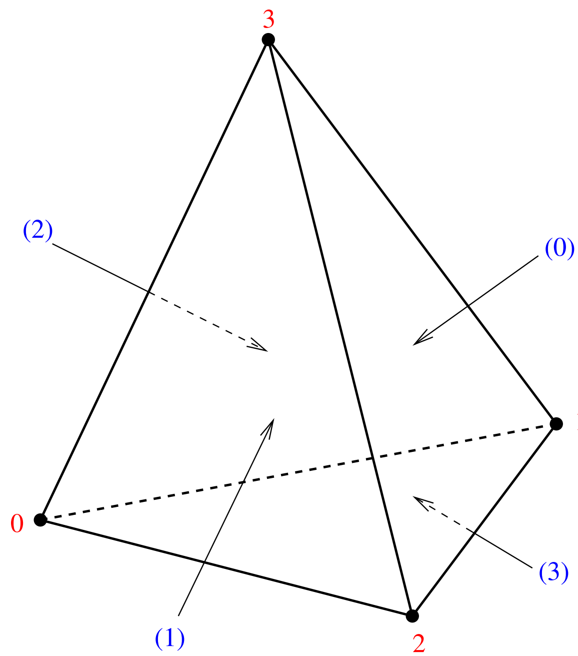

Figure 1: Vertexes in red, faces in parentheses in blue. Faces are numbered by the vertex opposite from the face. Outwardly directed right-hand rule for vertex numbering on a face.

The fluxes ψ_i is the discontinuous spatial degree of freedom at vertex i. The fluxes $\psi_j^{\mathrm{b}(k)}$ are the values ψ_j if $\Omega \cdot \hat{n}_k > 0$ where $\hat{n}_k$ the outward normal on face k, otherwise they are the corresponding values at across the face k at vertex j in the neighboring cell sharing the face k (or the prescribed boundary condition if it is a boundary face).

$$
\begin{aligned}
&\frac{1}{12}\overline{A}_1\left(2\psi_0^{\mathrm{b}(1)}+\psi_2^{\mathrm{b}(1)}+\psi_3^{\mathrm{b}(1)}\right)+\frac{1}{12}\overline{A}_2\left(2\psi_0^{\mathrm{b}(2)}+\psi_3^{\mathrm{b}(2)}+\psi_1^{\mathrm{b}(3)}\right)+\frac{1}{12}\overline{A}_3\left(2\psi_0^{\mathrm{b}(3)}+\psi_1^{\mathrm{b}(3)}+\psi_2^{\mathrm{b}(3)}\right)\\
&\qquad+\frac{1}{12}\overline{A}_0\left(\psi_0+\psi_1+\psi_2+\psi_3\right)+\frac{\sigma_t V}{20}\left(2\psi_0+\psi_1+\psi_2+\psi_3\right)=\frac{V}{20}\left(2Q_0+Q_1+Q_2+Q_3\right)\\
&\frac{1}{12}\overline{A}_0\left(2\psi_1^{\mathrm{b}(0)}+\psi_3^{\mathrm{b}(0)}+\psi_2^{\mathrm{b}(0)}\right)+\frac{1}{12}\overline{A}_2\left(2\psi_1^{\mathrm{b}(2)}+\psi_0^{\mathrm{b}(2)}+\psi_3^{\mathrm{b}(2)}\right)+\frac{1}{12}\overline{A}_3\left(2\psi_1^{\mathrm{b}(3)}+\psi_0^{\mathrm{b}(3)}+\psi_2^{\mathrm{b}(3)}\right)\\
&\qquad+\frac{1}{12}\overline{A}_1\left(\psi_0+\psi_1+\psi_2+\psi_3\right)+\frac{\sigma_t V}{20}\left(\psi_0+2\psi_1+\psi_2+\psi_3\right)=\frac{V}{20}\left(Q_0+2Q_1+Q_2+Q_3\right)\\
&\frac{1}{12}\overline{A}_0\left(2\psi_2^{\mathrm{b}(0)}+\psi_1^{\mathrm{b}(0)}+\psi_3^{\mathrm{b}(0)}\right)+\frac{1}{12}\overline{A}_1\left(2\psi_2^{\mathrm{b}(1)}+\psi_3^{\mathrm{b}(1)}+\psi_0^{\mathrm{b}(1)}\right)+\frac{1}{12}\overline{A}_3\left(2\psi_2^{\mathrm{b}(3)}+\psi_1^{\mathrm{b}(3)}+\psi_0^{\mathrm{b}(3)}\right)\\
&\qquad+\frac{1}{12}\overline{A}_2\left(\psi_0+\psi_1+\psi_2+\psi_3\right)+\frac{\sigma_t V}{20}\left(\psi_0+\psi_1+2\psi_2+\psi_3\right)=\frac{V}{20}\left(Q_0+Q_1+2Q_2+Q_3\right)\\
&\frac{1}{12}\overline{A}_0\left(2\psi_3^{\mathrm{b}(0)}+\psi_2^{\mathrm{b}(0)}+\psi_1^{\mathrm{b}(0)}\right)+\frac{1}{12}\overline{A}_1\left(2\psi_3^{\mathrm{b}(1)}+\psi_0^{\mathrm{b}(1)}+\psi_2^{\mathrm{b}(1)}\right)+\frac{1}{12}\overline{A}_2\left(2\psi_3^{\mathrm{b}(2)}+\psi_1^{\mathrm{b}(2)}+\psi_0^{\mathrm{b}(2)}\right)\\
&\qquad+\frac{1}{12}\overline{A}_3\left(\psi_0+\psi_1+\psi_2+\psi_3\right)+\frac{\sigma_t V}{20}\left(\psi_0+\psi_1+\psi_2+2\psi_3\right)=\frac{V}{20}\left(Q_0+Q_1+Q_2+2Q_3\right)
\end{aligned}
$$