

$$\begin{aligned}
d\mathbf{m}_{i,j \rightarrow k} &\rightarrow \mathbf{a}_k (\alpha_i + \alpha_j) + \mathbf{b}_k (\beta_i + \beta_j) + \mathbf{y}_k \eta_i + \frac{\mathbf{y}_k \eta_j}{\mathcal{A}_i} + \frac{\mathbf{x}_k \xi_i}{\mathcal{A}_j} + \eta_j \xi_i - \\
&\mathbf{B}_k \eta_j \xi_i + \frac{1}{4 \mathcal{A}_i \mathcal{A}_j} \in \left( 2 \mathbf{y}_k \eta_j (2 \mathbf{x}_k \xi_i + \mathcal{A}_j (-2 \beta_i + (\mathbf{1} - 3 \mathbf{B}_k) \eta_j \xi_i)) + \right. \\
&\mathcal{A}_i \xi_i (\mathbf{x}_k (-4 \beta_j + 2 (\mathbf{1} - 3 \mathbf{B}_k) \eta_j \xi_i) + \\
&\left. \mathcal{A}_j \eta_j (4 \mathbf{a}_k \mathbf{B}_k + (\mathbf{1} - 4 \mathbf{B}_k + 3 \mathbf{B}_k^2) \eta_j \xi_i) \right) + \mathbf{x}_k \xi_j
\end{aligned}$$

$$\begin{aligned}
d\Delta_{i \rightarrow j, k} &\rightarrow \mathbf{a}_j \alpha_i + \mathbf{a}_k \alpha_i + \mathbf{b}_j \beta_i + \mathbf{b}_k \beta_i + \mathbf{y}_j \eta_i + \mathbf{B}_j \mathbf{y}_k \eta_i + \\
&\mathbf{x}_j \xi_i + \mathbf{x}_k \xi_i + \frac{1}{2} \in (\mathbf{B}_j \mathbf{y}_j \mathbf{y}_k \eta_i^2 + \mathbf{x}_k \xi_i (-2 \mathbf{a}_j + \mathbf{x}_j \xi_i))
\end{aligned}$$

$$\begin{aligned}
d\mathbf{S}_i &\rightarrow -\mathbf{a}_i \alpha_i - \mathbf{b}_i \beta_i - \frac{\mathcal{A}_i (\mathbf{y}_i \eta_i + (-\eta_i + \mathbf{B}_i (\mathbf{x}_i + \eta_i)) \xi_i)}{\mathbf{B}_i} - \\
&\frac{1}{4 \mathbf{B}_i^2} \in \mathcal{A}_i \left( \mathcal{A}_i \eta_i^2 (2 \mathbf{y}_i^2 - 6 \mathbf{y}_i \xi_i + 3 \xi_i^2) + \mathbf{B}_i^2 \xi_i (4 \mathbf{a}_i \mathbf{x}_i + 2 \mathbf{x}_i^2 \mathcal{A}_i \xi_i + \right. \\
&2 \mathbf{x}_i (2 \beta_i + \mathcal{A}_i \eta_i \xi_i) + \eta_i (-4 + 4 \beta_i + \mathcal{A}_i \eta_i \xi_i) \left. \right) + \\
&2 \mathbf{B}_i \eta_i (\mathbf{y}_i (-2 + 2 \beta_i + 2 \mathbf{x}_i \mathcal{A}_i \xi_i + \mathcal{A}_i \eta_i \xi_i) - \\
&\xi_i (-2 + 2 \mathbf{a}_i + 2 \beta_i + 3 \mathbf{x}_i \mathcal{A}_i \xi_i + 2 \mathcal{A}_i \eta_i \xi_i))
\end{aligned}$$

$$\mathbf{R}_{i,j} \rightarrow \mathbf{a}_j \mathbf{b}_i + \mathbf{x}_j \mathbf{y}_i - \frac{1}{4} \in \mathbf{x}_j^2 \mathbf{y}_i^2$$

$$\mathbf{P}_{i,j} \rightarrow \alpha_j \beta_i + \eta_i \xi_j + \frac{1}{4} \in \eta_i^2 \xi_j^2$$