

Define [

$$dm_{i,j \rightarrow k} =$$

$$\left(\mathbb{E}_{\{i,j\} \rightarrow \{i,j\}} [\beta_i \mathbf{b}_i + \alpha_j \mathbf{a}_j, \eta_i \mathbf{y}_i + \xi_j \mathbf{x}_j, \mathbf{1}] \right.$$

$$\left. \left(\mathbf{a}\Delta_{i \rightarrow 1,2} // \mathbf{a}\Delta_{2 \rightarrow 2,3} // \overline{\mathbf{a}\mathbf{S}_3} \right) \left(\mathbf{b}\Delta_{j \rightarrow -1,-2} // \mathbf{b}\Delta_{-2 \rightarrow -2,-3} \right) // \right.$$

$$\left. \left(\mathbf{P}_{-1,3} \mathbf{P}_{-3,1} \mathbf{a}m_{2,j \rightarrow k} \mathbf{b}m_{i,-2 \rightarrow k} \right), \right.$$

$$d\mathbf{S}_i = \mathbb{E}_{\{i\} \rightarrow \{1,2\}} [\beta_i \mathbf{b}_1 + \alpha_i \mathbf{a}_2, \eta_i \mathbf{y}_1 + \xi_i \mathbf{x}_2, \mathbf{1}] // \left(\overline{\mathbf{b}\mathbf{S}_1} \mathbf{a}\mathbf{S}_2 \right) //$$

$$dm_{2,1 \rightarrow i},$$

$$d\Delta_{i \rightarrow j,k} = \left(\mathbf{b}\Delta_{i \rightarrow 3,1} \mathbf{a}\Delta_{i \rightarrow 2,4} \right) // \left(dm_{3,4 \rightarrow k} dm_{1,2 \rightarrow j} \right)]$$