

$$\text{In[*]} := (\mathbf{b2t_i} \ \mathbf{b2t_j})$$

$$\text{Out[*]} := \mathbb{E} \left[ \mathbf{a_i} \alpha_i + \mathbf{a_j} \alpha_j - \frac{\mathbf{t_i} \beta_i}{\gamma} - \frac{\mathbf{t_j} \beta_j}{\gamma}, \mathbf{y_i} \eta_i + \mathbf{y_j} \eta_j + \mathbf{x_i} \xi_i + \mathbf{x_j} \xi_j, \right. \\ \left. \mathbf{1} + \left( \frac{\mathbf{a_i} \beta_i}{\gamma} + \frac{\mathbf{a_j} \beta_j}{\gamma} \right) \epsilon + \left( \frac{\mathbf{a_i}^2 \beta_i^2}{2 \gamma^2} + \frac{\mathbf{a_i} \mathbf{a_j} \beta_i \beta_j}{\gamma^2} + \frac{\mathbf{a_j}^2 \beta_j^2}{2 \gamma^2} \right) \epsilon^2 + \mathbf{0}[\epsilon]^3 \right]$$

$$\text{In[*]} := \mathbb{E} [\mathbf{\beta_i} \mathbf{b_i} + \mathbf{\beta_j} \mathbf{b_j}, \mathbf{\eta_i} \mathbf{y_i} + \mathbf{\eta_j} \mathbf{y_j}, \mathbf{1}] \sim \mathbf{B_{i,j}} \sim (\mathbf{b2t_i} \ \mathbf{b2t_j})$$

$$\text{Out[*]} := \mathbb{E} \left[ \frac{-\mathbf{t_i} \beta_i - \mathbf{t_j} \beta_j}{\gamma}, \mathbf{y_i} \eta_i + \mathbf{y_j} \eta_j, \mathbf{1} + \frac{(\mathbf{a_i} \beta_i + \mathbf{a_j} \beta_j) \epsilon}{\gamma} + \frac{(\mathbf{a_i}^2 \beta_i^2 + 2 \mathbf{a_i} \mathbf{a_j} \beta_i \beta_j + \mathbf{a_j}^2 \beta_j^2) \epsilon^2}{2 \gamma^2} + \mathbf{0}[\epsilon]^3 \right]$$

$$\text{In[*]} := \mathbb{E} [\mathbf{\tau_i} \mathbf{t_i} + \mathbf{\tau_j} \mathbf{t_j}, \mathbf{\eta_i} \mathbf{y_i} + \mathbf{\eta_j} \mathbf{y_j}, \mathbf{1}] \sim \mathbf{B_{i,j}} \sim \mathbf{tm_{i,j} \rightarrow k}$$

$$\text{Out[*]} := \mathbb{E} [\mathbf{t_k} \tau_i + \mathbf{t_k} \tau_j, \mathbf{y_k} \eta_i + \mathbf{y_k} \eta_j, \mathbf{1} + \mathbf{0}[\epsilon]^3]$$

$$\text{In[*]} := (\mathbf{b2t_i} \ \mathbf{b2t_j}) \sim \mathbf{B_{i,j}} \sim \mathbf{tm_{i,j} \rightarrow k}$$

$$\text{In[*]} := \mathbb{E} [\mathbf{\beta_i} \mathbf{b_i} + \mathbf{\beta_j} \mathbf{b_j}, \mathbf{\eta_i} \mathbf{y_i} + \mathbf{\eta_j} \mathbf{y_j}, \mathbf{1}] \sim \mathbf{B_{i,j}} \sim (\mathbf{b2t_i} \ \mathbf{b2t_j}) \sim \mathbf{B_{i,j}} \sim \mathbf{tm_{i,j} \rightarrow k}$$

$$\text{Out[*]} := \mathbb{E} \left[ \frac{-\mathbf{t_k} \beta_i - \mathbf{t_k} \beta_j}{\gamma}, \mathbf{y_k} \eta_i + \mathbf{y_k} \eta_j, \mathbf{1} + \frac{(\mathbf{a_k} \beta_i + \mathbf{a_k} \beta_j - \gamma \mathbf{y_k} \beta_i \eta_j) \epsilon}{\gamma} + \right. \\ \left. \frac{1}{2 \gamma^2} (\mathbf{a_k}^2 \beta_i^2 + 2 \mathbf{a_k}^2 \beta_i \beta_j + \mathbf{a_k}^2 \beta_j^2 + \gamma^2 \mathbf{y_k} \beta_i^2 \eta_j - 2 \gamma \mathbf{a_k} \mathbf{y_k} \beta_i^2 \eta_j - 2 \gamma \mathbf{a_k} \mathbf{y_k} \beta_i \beta_j \eta_j + \gamma^2 \mathbf{y_k}^2 \beta_i^2 \eta_j^2) \epsilon^2 + \mathbf{0}[\epsilon]^3 \right]$$

$$\text{In[*]} := \mathbb{E} [\mathbf{\alpha_i} \mathbf{a_i} + \mathbf{\alpha_j} \mathbf{a_j} + \mathbf{\tau_i} \mathbf{t_i} + \mathbf{\tau_j} \mathbf{t_j}, \mathbf{\eta_i} \mathbf{y_i} + \mathbf{\eta_j} \mathbf{y_j}, \mathbf{1}] \sim \mathbf{B_{i,j}} \sim \mathbf{tm_{i,j} \rightarrow k} \ / \cdot \ \mathbf{U21}$$

$$\text{Out[*]} := \mathbb{E} [\mathbf{a_k} \alpha_i + \mathbf{a_k} \alpha_j + \mathbf{t_k} \tau_i + \mathbf{t_k} \tau_j, e^{-\gamma \alpha_i} (e^{\gamma \alpha_i} \mathbf{y_k} \eta_i + \mathbf{y_k} \eta_j), \mathbf{1} + \mathbf{0}[\epsilon]^3]$$