

$$T_{r=0} \begin{bmatrix} i_p // n_p \\ i_o // n_o \end{bmatrix} = \left(1 - \frac{n_p - 1}{N}\right) \frac{n_p - i_p}{n_p} \sum_{r=0}^{r_{max}} T_r \begin{bmatrix} i_p // n_p - 1 \\ i_o // n_o - 1 \end{bmatrix} \quad \left[\begin{array}{c} \text{diagram: two nodes, one with a self-loop, one with an arrow} \\ \vdots \end{array} \right] \quad (A)$$

$$+ \frac{n_p - i_p}{N} \sum_{r=0}^{r_{max}} T_r \begin{bmatrix} i_p // n_p \\ i_o // n_o - 1 \end{bmatrix} \quad \left[\begin{array}{c} \text{diagram: two nodes, one with a self-loop, one with an arrow} \\ \vdots \end{array} \right] \quad (B)$$

$$+ \left(1 - \frac{n_p - 1}{N}\right) \frac{i_p}{n_p} \sum_{r=0}^{r_{max}} (1 - s)^{1 - \delta_{r, r_{max}}} T_r \begin{bmatrix} i_p - 1 // n_p - 1 \\ i_o - 1 // n_o - 1 \end{bmatrix} \quad \left[\begin{array}{c} \text{diagram: two nodes, one with a self-loop, one with an arrow} \\ \vdots \end{array} \right] \quad (C)$$

$$+ \frac{i_p}{N} \sum_{r=0}^{r_{max}} (1 - s)^{1 - \delta_{r, r_{max}}} T_r \begin{bmatrix} i_p // n_p \\ i_o - 1 // n_o - 1 \end{bmatrix} \quad \left[\begin{array}{c} \text{diagram: two nodes, one with a self-loop, one with an arrow} \\ \vdots \end{array} \right] \quad (D)$$

$$T_r \begin{bmatrix} i_p // n_p \\ i_o // n_o \end{bmatrix} = \left(1 - \frac{n_p - 1}{N}\right) \frac{i_p}{n_p} s T_{r-1} \begin{bmatrix} i_p - 1 // n_p - 1 \\ i_o // n_o \end{bmatrix} \quad \left[\begin{array}{c} \text{diagram: two nodes, one with a self-loop, one with an arrow} \\ \vdots \end{array} \right] \quad (rC)$$

$$+ \frac{i_p}{N} s T_{r-1} \begin{bmatrix} i_p // n_p \\ i_o // n_o \end{bmatrix} \quad \left[\begin{array}{c} \text{diagram: two nodes, one with a self-loop, one with an arrow} \\ \vdots \end{array} \right] \quad (rD)$$