

The Planarity Conditions

May-31-14 7:28 AM

Overcrossings commute: (should be tautological):

$$\left[\begin{pmatrix} A & 0 \\ 0 & I \end{pmatrix}, \begin{pmatrix} tI & 0 \\ (1-t)\dots & 1 \end{pmatrix} \right] = 0$$

$$\begin{pmatrix} A & 0 \\ 0 & I \end{pmatrix} \begin{pmatrix} tI & 0 \\ (1-t)\dots & 1 \end{pmatrix} \begin{pmatrix} tA & 0 \\ (1-t)\dots & 1 \end{pmatrix}$$

$$\begin{pmatrix} tI & 0 \\ (1-t)\dots & 1 \end{pmatrix} \begin{pmatrix} A & 0 \\ 0 & I \end{pmatrix} \begin{pmatrix} tA & 0 \\ (1-t)\dots & 1 \end{pmatrix} \begin{pmatrix} \text{col sums} \\ \dots \end{pmatrix}$$

$$\Rightarrow \text{col sums } (A) \equiv 1.$$