e.g. $v_{\begin{smallmatrix}3&5&4\\2&1\end{smallmatrix}} \overset{\text{column}}{=} v_{\begin{smallmatrix}2&1&4\\3&5\end{smallmatrix}} \overset{\text{row}}{=} v_{\begin{smallmatrix}1&2&4\\3&5\end{smallmatrix}} - v_{\begin{smallmatrix}1&3&4\\2&5\end{smallmatrix}}$

e.g. $x_1 v_{\begin{smallmatrix}1&2&3\\4&5\end{smallmatrix}} + x_2 v_{\begin{smallmatrix}1&2&4\\3&5\end{smallmatrix}} + x_3 v_{\begin{smallmatrix}1&3&4\\2&5\end{smallmatrix}} + x_4 v_{\begin{smallmatrix}1&2&5\\3&4\end{smallmatrix}} + x_5 v_{\begin{smallmatrix}1&3&5\\2&4\end{smallmatrix}} = 0 \qquad x_i \in \mathbb{C}$

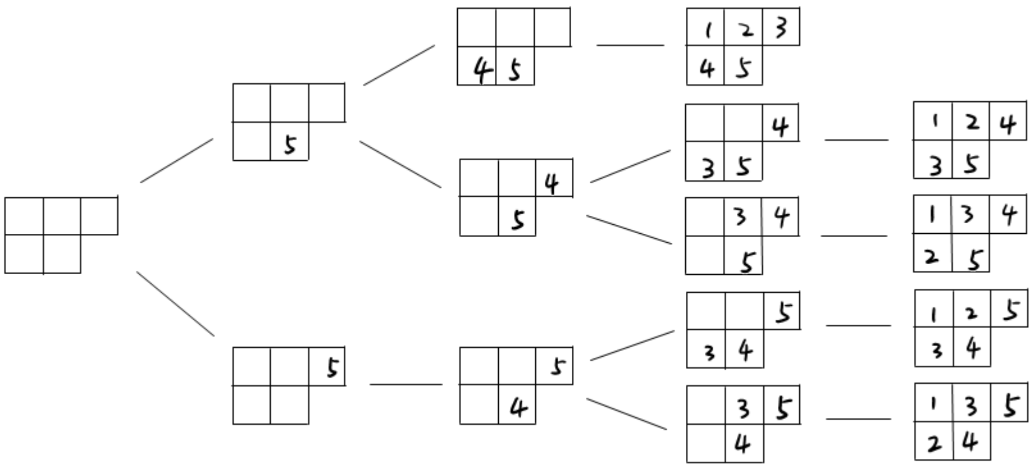
$\{123/45\} \to x_1 = 0 \qquad \{134/25\} \to x_3 = 0 \qquad \{135/24\} \to x_5 = 0$

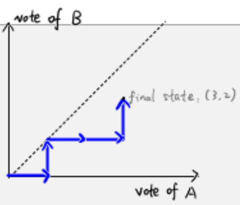
$\{124/35\} \to x_2 = 0 \qquad \{125/35\} \to x_4 = 0$

T_0' : a standard tableau

$= \langle v_{\begin{smallmatrix}1&2&3\\4&5\end{smallmatrix}}, v_{\begin{smallmatrix}1&2&4\\3&5\end{smallmatrix}}, v_{\begin{smallmatrix}1&3&4\\2&5\end{smallmatrix}}, v_{\begin{smallmatrix}1&2&5\\3&4\end{smallmatrix}}, v_{\begin{smallmatrix}1&3&5\\2&4\end{smallmatrix}} \rangle_{\mathbb{C}}$

$\begin{smallmatrix}3&5&4\\1&2\end{smallmatrix} = \begin{smallmatrix}3&4&5\\2&1\end{smallmatrix} = \begin{smallmatrix}3&4&5\\1&2\end{smallmatrix} := \{345/12\}$

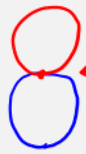




$$\begin{array}{ccc} \tilde{\mathfrak{g}} \subseteq \mathfrak{g} \times \mathcal{B} \longrightarrow \mathcal{B}_{:=\mathcal{F}\ell(n)} & & \tilde{\mathcal{N}} \\ \downarrow \mu & \rightsquigarrow & \downarrow \mu|_{\mathcal{N}\times B} \\ \mathfrak{g}_{:=sl_n(\mathbb{C})} & & \mathcal{N} \end{array}$$

resolution of nilpotent cone

$$B_\lambda = \begin{array}{l} \{0 \subseteq \langle e_1 \rangle \subseteq \langle e_1, be_2+ce_3 \rangle \subseteq \mathbb{C}^3\} \longrightarrow \\ \qquad\qquad \uplus \\ \{0 \subseteq \langle ae_1+e_3 \rangle \subseteq \langle e_1, e_3 \rangle \subseteq \mathbb{C}^3\} \longrightarrow \end{array}$$



$\leftarrow \{0 \subseteq \langle e_1 \rangle \subseteq \langle e_1, e_3 \rangle \subseteq \mathbb{C}^3\}$

$$\begin{array}{ccc} B_{\lambda'} \longrightarrow & & \\ \vdots & B_\lambda & \{0 \subseteq V_1 \subseteq V_2 \subseteq \cdots \subseteq \mathbb{C}^n\} \circlearrowleft X_\lambda \\ B_{\lambda''} \longrightarrow & \Big\downarrow \pi & \Big\downarrow \\ \phi \longrightarrow & \mathbb{P}^{n-1} & [V_1] \end{array}$$

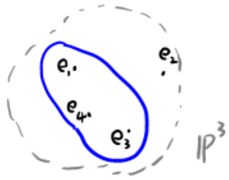
$\mathcal{F}\ell(3) = B_{1,1,1} \longrightarrow$

$\mathbb{P}^1 \vee \mathbb{P}^1 = B_{2,1} \longrightarrow$

$$\begin{array}{ccccccc} B_{2,1,1} & & B_{1,1,1} & & B_{2,1}\times\mathbb{C} & & B_{2,1}\times\mathbb{C}^2 \\ \Big\downarrow \pi & & \Big\downarrow & & \Big\downarrow & & \Big\downarrow \\ \mathbb{P}^2 = & & \{*\} & \sqcup & \mathbb{C} & \sqcup & \mathbb{C}^2 \\ & & [e_1] & & [ae_1+e_3] & & [ae_1+be_3+e_4] \end{array}$$

$\mathbb{P} \longrightarrow$

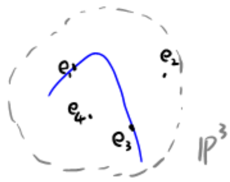
$\Lambda \longrightarrow$



$\mathbb{P}^1 \vee \mathbb{P}^1 = B_{2,1} \longrightarrow$

$$\begin{array}{ccccc} B_{2,2} & & B_{2,1}\times\{*\} & & B_{2,1}\times\mathbb{C} \\ \Big\downarrow \pi & & \Big\downarrow & & \Big\downarrow \\ \mathbb{P}^1 = & & \{*\} & \sqcup & \mathbb{C} \\ & & [e_1] & & [ae_1+e_3] \end{array}$$

$\Lambda \longrightarrow$



Ex. $m=3$

crossingless matchings of 6 points $\longleftrightarrow$ Young tableau of $(3,3)$ type

$\longleftrightarrow \begin{array}{|c|c|c|}\hline 1&3&5\\\hline 2&4&6\\\hline\end{array}$

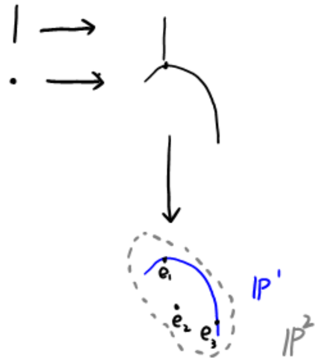
$\longleftrightarrow \begin{array}{|c|c|c|}\hline 1&3&4\\\hline 2&5&6\\\hline\end{array}$

$\longleftrightarrow \begin{array}{|c|c|c|}\hline 1&2&5\\\hline 3&4&6\\\hline\end{array}$

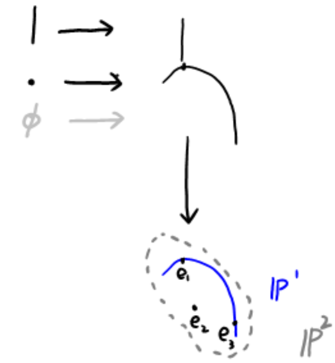
$\longleftrightarrow \begin{array}{|c|c|c|}\hline 1&2&4\\\hline 3&5&6\\\hline\end{array}$

$\longleftrightarrow \begin{array}{|c|c|c|}\hline 1&2&3\\\hline 4&5&6\\\hline\end{array}$

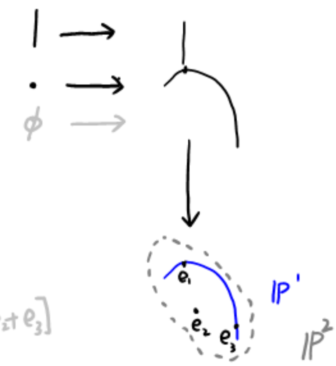
$$\begin{tikzcd} \mathbb{P}^1 = B_{1,1} \arrow[dr] & \\ \{*\} = B_2 \arrow[r] & B_{2,1} \arrow[d, "\pi"] \\ & \mathbb{P}^1 \end{tikzcd}$$



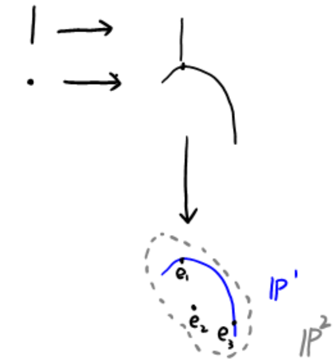
$$\begin{tikzcd} \mathbb{P}^1 = B_{1,1} \arrow[dr] & \\ \{*\} = B_2 \arrow[r] & B_{2,1} \arrow[d, "\pi"] \\ \emptyset \arrow[ur] & \mathbb{P}^2 \end{tikzcd}$$



$$\begin{tikzcd} \mathbb{P}^1 = B_{1,1} \arrow[dr] & & B_{1,1}\times\{*\} \arrow[d] & B_2\times\mathbb{C} \arrow[d] & \emptyset \arrow[d] \\ \{*\} = B_2 \arrow[r] & B_{2,1} \arrow[d, "\pi"] & & & \\ \emptyset \arrow[ur] & \mathbb{P}^2 = & \{*\} \sqcup & \mathbb{C} \sqcup & \mathbb{C}^2 \\ & & {[e_1]} & {[ae_1+e_3]} & {[ae_1+be_2+e_3]} \end{tikzcd}$$



$$\begin{tikzcd} \mathbb{P}^1 = B_{1,1} \arrow[dr] & & B_{1,1}\times\{*\} \arrow[d] & B_2\times\mathbb{C} \arrow[d] \\ \{*\} = B_2 \arrow[r] & B_{2,1} \arrow[d, "\pi"] & & \\ & \mathbb{P}^1 = & \{*\} \sqcup & \mathbb{C} \\ & & {[e_1]} & {[ae_1+e_3]} \end{tikzcd}$$



$$\begin{tikzcd} \left\{\begin{matrix}\text{standard filling}\\ \text{of shape } \lambda\end{matrix}\right\} \ni T = \begin{array}{|c|c|c|}\hline 3 & 5 & 4 \\ \hline 1 & 2 \\ \cline{1-2}\end{array} \arrow[d] \\ T^\lambda := \left\{\begin{matrix}\text{Young tabloid}\\ \text{of shape } \lambda\end{matrix}\right\} \ni \{T\} = \begin{array}{c} \overline{3\ 5\ 4} \\ \overline{1\ 2} \\ \hline \end{array} = \{345/12\} \end{tikzcd}$$